Alcohol | Aluminum | Antimony | Apples |
Arsenic | Barley | Bauxite | Beer |
Bismuth | Broilers | Burlap &
Butter | Cadmium | Castor
Cattle & Calves | Ceme
Cheese | Chromite |
Cobalt | Cocoa | Co
Coconut Oil & Co
Copra | Coffee |
Coke | Copper |
Corn Oil | Cotton
Cottonseed &
Cottonseed Pro
Currencies | Dis
Distilled Spirits |
Eggs | Electric Po
Fertilizers | Flaxse
& Linseed Oil | Gas
Glass | Gold | Grain S
Sorghums | Hard Fibers
Hay | Heating Oil | Hides &
Hogs | Honey | Interest Rates |
Iron & Steel | Lard | Lead | Lumber
Plywood | Magnesium | Manganese | Ma

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INTRODUCTION

Commodity prices declined slightly in 1990, and the CRB Spot Price Index fell by 1 percent, while the CRB Futures Price Index retreated by 3.4 percent. However, as energy prices rose following Iraq's invasion of Kuwait, inflationary pressures mounted. The Consumer Price Index increased by 6.4 percent on the year, and the Producer Price Index rose by 5.8 percent.

Trading in the futures markets continued to expand in 1990, reaching 276.5 million contracts, more than 3 percent above the 1989 level. However, growth was below the average rate of 8 percent in the previous two years, and this appeared to be because of the U.S. recession, which began in the third quarter of 1990.

The interest-rate contracts continued to dominate futures trading and accounted for nearly 45 percent of all volume in 1990. Though trading in interest-rate futures had been growing by leaps and bounds, it fell slightly in 1990. Activity in Treasury bond futures continued to surge, but that was more than offset by a decline in trading in Eurodollar contracts.

The second most prominent markets in terms of volume were the agricultural commodities, which accounted for 21 percent of all trading in 1990. Volume in the agriculturals increased by nearly 6 percent in 1990, as trading in corn, soybeans, and hogs expanded. Activity in the wheat, cattle, and sugar rings declined, however.

Energy products accounted for 13 percent of all futures trading volume during the year. Trading in the energy markets has swelled, showing an almost three-fold increase in five years. In 1990 alone, volume in energy futures grew by 15 percent to over 35 million contracts and was heightened by the outbreak of the Kuwait conflict and speculation in the oil market.

Trading in foreign currency futures increased by a strong 7 percent in 1990 and made up over 10 percent of all futures volume for the year. Volume in Deutsche mark futures surged by 12 percent, as the mark rose on optimism about German unification. Yet, trading in the Japanese yen contract fell.

Precious metals and stock indices each made up a little over 5 percent of total futures volume in 1990. Trading in stock indices soared by 11 percent to nearly 15 million contracts, as volume in the S&P 500 contract grew. But activity in equity futures was still well below the levels seen before the 1987 stock market crash. For instance, in 1986, trading in stock indices was more than 25 million contracts.

In precious metals futures, activity has declined in recent years, and trading dropped by over 8 percent in 1990. Silver prices fell to a 17-year low, dampening speculative participation.

The U.S. economy entered a recession in the fourth quarter of 1990, when growth slowed to -2 percent annualized. For the year as a whole, the economy expanded by a slight 0.4 percent. Real estate was particularly weak during 1990, and construction spending dropped by 5.4 percent, while housing starts and new home sales fell sharply. Industrial production declined by 1.4 percent, and durable goods orders dropped by 8.7 percent. The unemployment rate, which began the year at 5.3 percent, ended it at 6.2 percent, as a result of large layoffs late in the year. The consumer sector was very soft late in the year, and retail sales shrank by 2 percent in real terms during 1990.

The 1990 year book contains three feature articles, beginning with "The Flare for Natural Gas Futures," by George B. Parker. The study focuses on the fundamental factors affecting this new futures contract, which is traded on the New York Mercantile Exchange. The author has years of experience as a futures marketing manager, a commodity analyst, and a research director, and was most recently with Balfour MacLaine Futures. Mr. Parker, a frequent contributor to CRB publications, also teaches economics and has been on the faculty of Nassau Community College for 25 years.

"Seasonal Volume and Open Interest Analysis," by Kenneth H. Shaleen, examines seasonal patterns in these trading statistics and how they can be used as a trading tool. Charts providing a graphic history of open interest for a number of futures markets are included. Mr. Shaleen is president of Chartwatch, a Chicago-based research firm to the futures industry. He is also an instuctor of courses in technical analysis and the author of several books.

"An Introduction to German Interest Rate Futures," by Ralf Herklotz, looks at the German government's 10-year bonds and the German Bund and Euromark futures contracts traded on the London International Financial Futures Exchange (LIFFE). The author explains how to hedge a specific Bund issue or a portfolio of Bunds and how to spread Euromark futures against Bund contracts. The author is manager of business development in Europe at LIFFE and was closely associated with the launch of the Bund and Euromark futures and options.

We wish to express our appreciation for the assistance provided by government agencies, particularly the U.S. Department of Agriculture and the Bureau of Mines, and by the commodity exchanges and various trade organizations. We have attempted to list these organizations on page 4T.

The Editorial Board
March 1991

TABLE OF CONTENTS

PAGE
4T Acknowledgments
5T The Commodity Price Trend
15T The Flare for Natural Gas Futures
24T Seasonal Volume and Open Interest Analysis
33T An Introduction to German Interest-Rate Futures
40T Futures Volume Highlights

PAGE
1 Alcohol
2 Aluminum
6 Antimony
7 Apples
8 Arsenic
9 Barley
13 Bauxite
14 Bismuth
15 Broilers
16 Butter
18 Cadmium
19 Castor Beans
20 Cattle and Calves
27 Cement
28 Cheese
30 Chromite
31 Coal
33 Cobalt
34 Cocoa
40 Coconut Oil and Copra
42 Coffee
47 Coke
48 Copper
55 Corn
62 Corn Oil
63 Cotton
73 Cottonseed and Products
77 CRB Futures Index
78 Currencies
84 Eggs
88 Electric Power
90 Fertilizers (Nitrogen, Phosphate & Potash)
92 Flaxseed and Linseed Oil
96 Gas
98 Gasoline
100 Gold
104 Grain Sorghum
106 Hay
107 Heating Oil
111 Hides and Leather
114 Hogs
119 Honey
120 Interest Rates
132 Iron and Steel
137 Lard
139 Lead
143 Lumber and Plywood
148 Magnesium
149 Manganese

PAGE
151 Meats
155 Mercury
157 Milk
159 Molasses
161 Molybdenum
162 Nickel
163 Oats
168 Olive Oil
169 Onions
170 Oranges and Orange Juice
173 Palm Oil
174 Paper
176 Peanuts and Peanut Oil
180 Pepper
182 Petroleum
187 Plastics
189 Platinum-Group Metals
194 Pork Bellies
198 Potatoes
202 Rapeseed
205 Rayon amd Other Synthetic Fibers
207 Rice
210 Rubber
215 Rye
219 Salt
220 Sheep and Lambs
222 Silver
227 Soybean Meal
231 Soybean Oil
236 Soybeans
243 Stock Index Futures
249 Sugar
256 Sulfur
257 Sunflowerseed and Oil
258 Tall Oil
259 Tallow and Greases
260 Tea
263 Tin
267 Titanium
269 Tobacco
272 Tung Oil
273 Tungsten
274 Turkeys
276 Uranium
277 Vanadium
278 Wheat and Flour
288 Wool
291 Zinc

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American Bureau of Metal Statistics
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American Iron and Steel Institute
American Metal Market
American Paper and Pulp Association
American Petroleum Institute
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Chicago Mercantile Exchange
Citrus Associates of N.Y. Cotton Exchange
Coffee, Sugar & Cocoa Exchange
Commodity Exchange, N.Y.
Commodity Futures Trading Commission
Edison Electric Institute
F.W. Dodge Corp.
Federal Power Commission
Federal Reserve Board
Florida Department of Citrus
Futures Industry Association
General Services Administration
Gill & Duffus Ltd.
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International Monetary Market (Chicago)
International Tea Committee
Johnson Matthey Ltd.
The Journal of Commerce
Kansas City Board of Trade
Leather Industries of America Inc.
London Metal Exchange
MidAmerica Commodity Exc[illegible]
Minneapolis Grain Exchange
National Coffee Association of U.S.A., Inc.
New York Cotton Exchange
New York Futures Exchange
New York Mercantile Exchange
Newsprint Service Bureau
Nuclear Exchange Corp.
Nuclear Regulatory Commission
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Portland Cement Association
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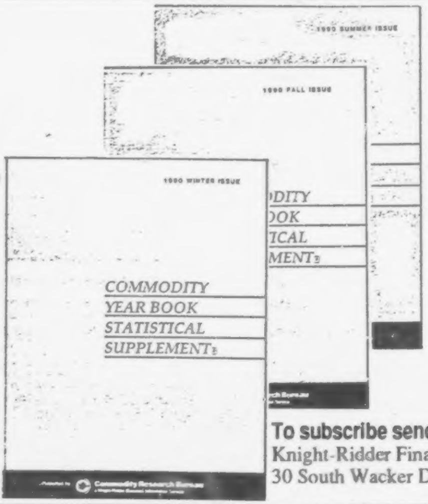

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THE COMMODITY PRICE TREND

The CRB Futures Price Index, reflecting activity in 21 commodity markets, retreated by 3.2 percent in 1990, as declines in the grains, oilseeds, precious metals, and industrials groups more than offset increases in the imported (softs) and livestock.

Precious Metals - The precious metals group registered a sharp 13 percent drop during the year, with silver prices falling to a 14-year low, as COMEX and LME silver stocks rose in the wake of soft demand. Platinum futures, having begun the year at around $500/oz., ended it at a 4 1/2-year low of $400, dragged down by weak industrial demand. Declines in auto production reduced the need for platinum in catalytic converters.

Though gold rallied in August, following the Iraqi invasion, its gains were less than expected. And when oil prices climbed to new highs in early October, gold performed poorly. During the year, gold producers sold futures on price advances, stifling the market. Persistent weakness in the dollar during 1990 failed to help gold much.

Industrials - The industrials group fell by 1.7 percent in 1990, as weakness in lumber, platinum, and silver countered gains in crude oil, copper, and cotton.[1] Crude oil, which started the year at $21/bbl., shot up when the occupation of Kuwait and the trade embargo against Iraq cut off shipments of Iraqi and Kuwaiti oil. Panic buying pushed crude oil futures up to a record $41/bbl. in October, but as stepped-up Saudi production boosted supplies, prices later fell to $27/bbl.

Copper remained strong in 1990, and nearby futures traded up to almost $1.40/lb. on continuing concerns about supply tightness, following several years of production constraints worldwide. Cotton futures climbed to 94 cents/lb. in the summer, the highest since 1981, and were supported by a projected low carryout for 1990/91 and heavy sales to China during the fall. Lumber prices began the year on a strong note, but as construction spending and housing starts fell, lumber plunged to a 4-year low in the fall.

Grains - The grains group was the biggest loser in 1990, falling by 17 percent on the year. Large U.S. and foreign wheat crops in 1990 led to stiff export competition, and wheat futures tumbled from $4.10/bu. at year's beginning to $2.38 later. Washington's belated offer of export credits on farm products to the Soviets, when other suppliers had provided credit, cost the U.S. some grain sales.

The corn market rallied to $3.00/bu. in the summer on a strong outlook for food and industrial use, but later retreated as the U.S. crop was large and export sales to the Soviets slumped. In oats, ample supplies and slowing growth in food use sent futures to a 4-year low.

Oilseeds - The oilseeds group was also down and suffered a 12 percent loss on the year. Soybean futures advanced in the spring, supported by a strong crush rate, but later slumped to $5.50/bu., as bean and product exports were sluggish.

Soyoil futures rallied at midyear, partly because domestic use was brisk, following consumer shifts away from tropical oils for health reasons. However, soyoil sales to key foreign customers, like Pakistan and Tunisia, were down sharply in the season beginning October 1, and the market lost ground. Soybean meal traded in a choppy, sideways to lower pattern, as domestic supplies increased and were more than ample.

Imported - The imported group posted a gain of 1.6 percent in 1990, led by cocoa. A speculative rally in the spring lifted cocoa prices, and summer's dry weather in West African growing regions provided support. However, as the year progressed, it was evident that world production would be large enough for a seventh consecutive cocoa surplus in 1990/91.

Coffee prices worked higher in 1990, after the lows seen when the international coffee accord collapsed in 1989. Brazil had a small 1990/91 crop of 22.1 million bags and was expected to have similarly low output in 1991/92. Sugar futures rallied to over 15 cents/lb. in the spring of 1990, only to lose steam as large-scale buying by China and the USSR failed to materialize.

Livestock - The livestock group was the bright spot in 1990, registering an almost 10 percent gain on the year. Live cattle futures reached an all-time high of over 80 cents/lb., with slaughters down from the previous year, mainly because of herd rebuilding.

Hogs climbed to over 67 cents/lb. in late spring as the hog inventory was smaller than a year earlier. Pork bellies rallied to a 3 1/2-year high in the fall, with sharp drawdowns in frozen stocks.

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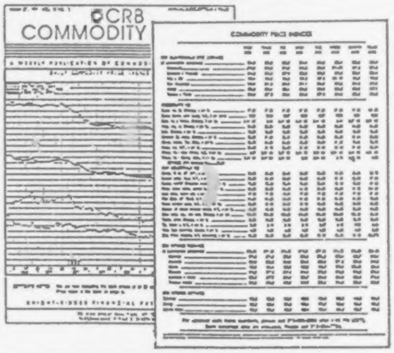
[1] Platinum and silver are included in the industrials and precious metals groups.



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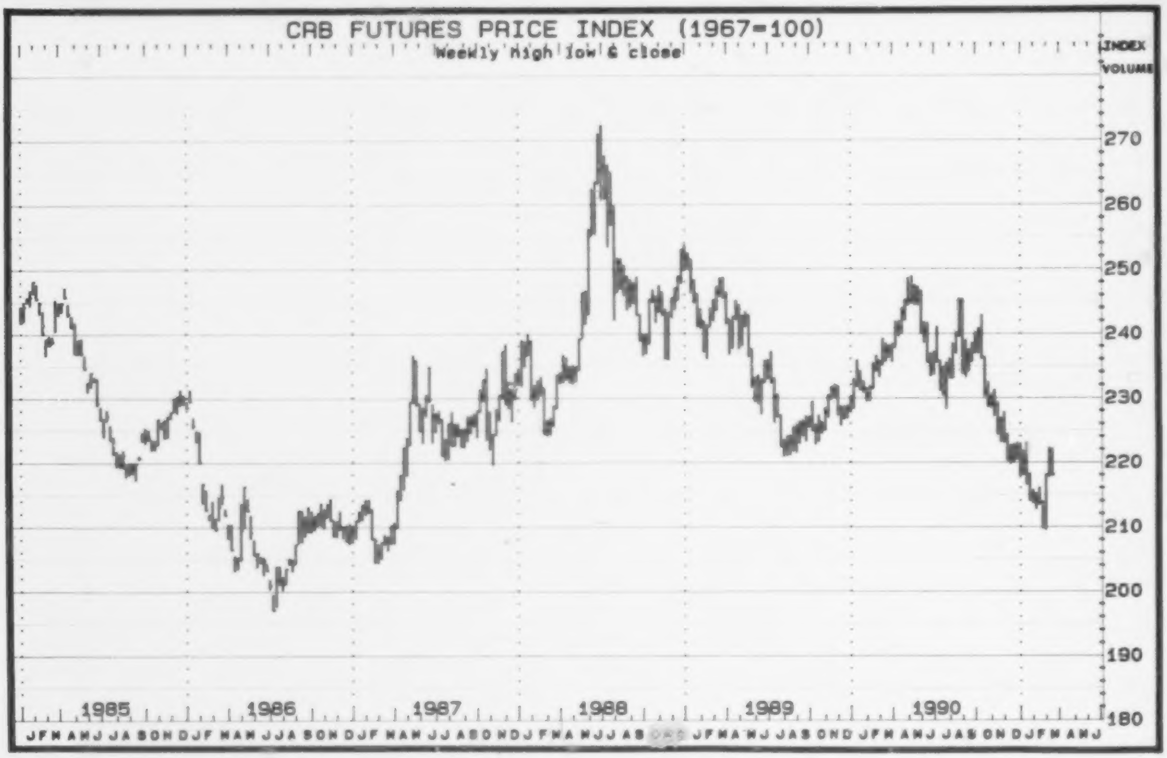

Monthly CRB Futures Price Index (High, Low & Close 1967 = 100)

Year		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Range
1984	High	278.3	276.1	283.0	283.2	284.2	280.3	268.3	259.8	256.3	254.8	258.7	253.2	284.2
	Low	273.2	266.1	274.7	275.1	275.3	268.4	249.4	253.3	250.3	252.0	252.7	244.0	244.0
	Close	273.6	272.5	283.0	275.1	280.1	271.0	249.4	257.1	251.4	254.8	253.8	244.2	—
1985	High	247.9	248.1	245.2	247.1	239.7	233.8	228.0	221.7	224.5	225.6	227.7	231.1	248.1
	Low	241.7	236.6	238.2	239.3	230.9	226.6	219.3	217.7	217.2	221.9	223.8	227.6	217.2
	Close	247.1	238.2	244.4	239.3	232.3	226.6	220.7	219.7	222.9	225.6	227.7	229.2	—
1986	High	231.1	216.6	216.5	213.5	216.1	205.7	203.7	207.1	212.3	213.4	213.3	212.0	231.1
	Low	219.9	209.9	209.4	203.0	205.5	201.6	196.9	201.0	208.2	209.7	208.4	207.5	196.9
	Close	219.9	209.9	209.6	213.5	205.5	201.6	200.1	207.1	210.9	211.3	210.7	209.1	—
1987	High	213.9	213.7	210.1	221.7	235.6	234.6	227.8	226.8	227.3	232.7	237.1	234.7	237.1
	Low	208.3	204.2	205.7	209.4	222.6	223.1	220.7	222.4	223.5	222.7	221.1	227.5	204.2
	Close	212.6	205.4	208.7	221.7	224.9	225.9	225.9	223.0	223.8	223.4	234.6	232.5	—
1988	High	239.3	232.9	233.5	236.0	248.4	270.5	265.8	251.0	248.6	246.5	247.0	252.8	270.5
	Low	230.4	224.3	224.5	232.7	232.5	249.8	242.0	243.7	237.1	237.6	236.0	244.1	224.3
	Close	230.4	225.7	233.0	234.4	248.4	265.1	246.2	246.2	238.8	243.9	244.9	251.8	—
1989	High	251.6	243.3	248.1	244.6	242.8	235.4	237.0	225.5	226.8	228.1	231.7	229.9	251.6
	Low	241.1	236.6	241.7	237.7	229.4	227.9	221.2	221.5	222.9	223.0	226.0	225.6	221.2
	Close	242.4	243.2	242.1	238.0	229.4	234.4	221.2	225.5	226.8	225.7	228.8	229.9	—
1990	High	235.1	236.3	239.0	245.8	247.8	241.2	240.0	244.7	239.8	242.0	231.1	223.8	247.8
	Low	228.8	229.9	234.2	238.4	241.5	233.8	230.3	233.1	234.9	228.6	223.2	220.1	220.1
	Close	229.9	234.6	238.2	245.8	241.5	236.9	235.0	233.7	239.2	229.8	223.3	222.6	—
1991	High	222.8	215.6											
	Low	214.1	209.7											
	Close	214.1	215.6											

Source: Commodity Research Bureau

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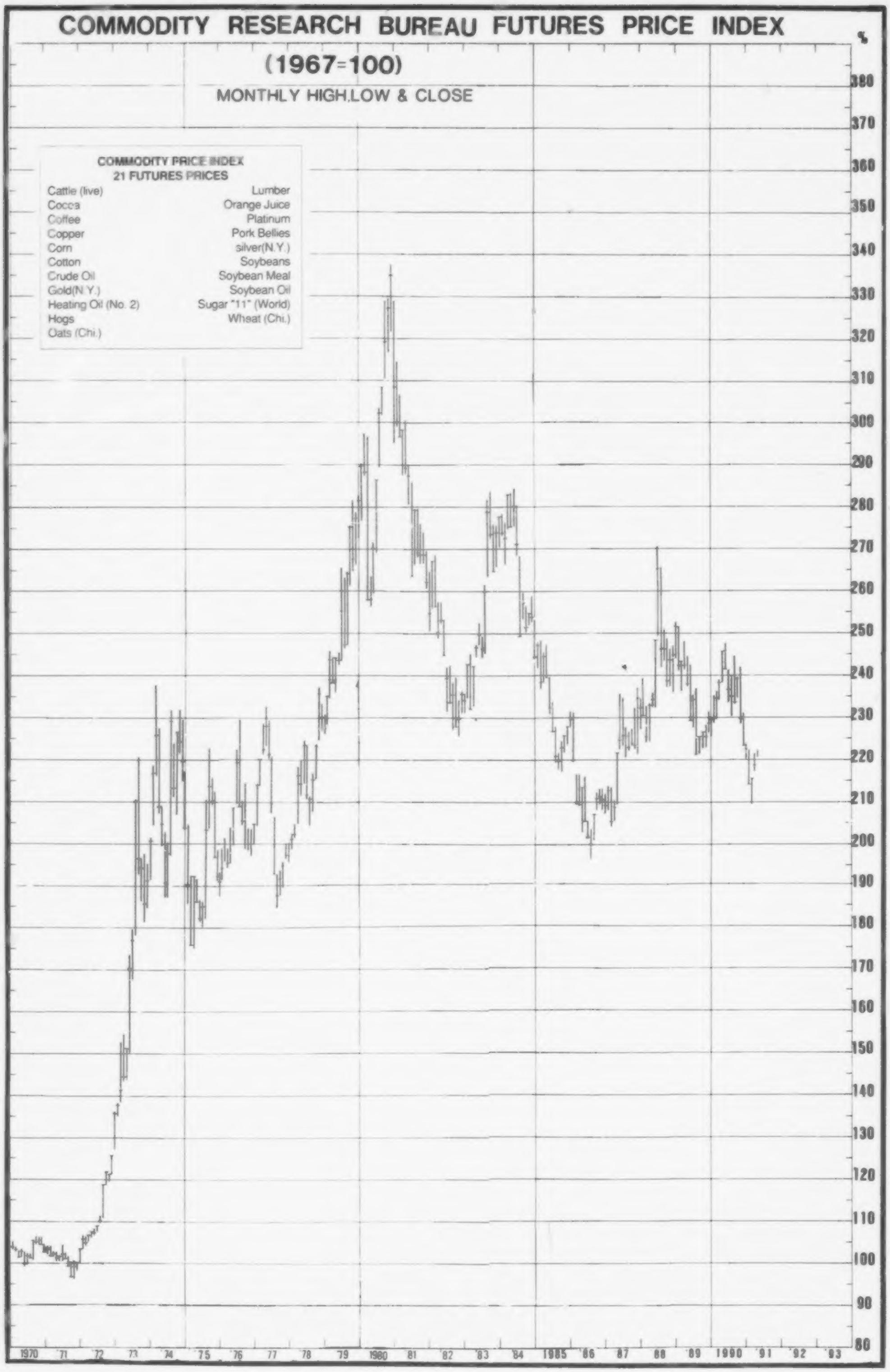
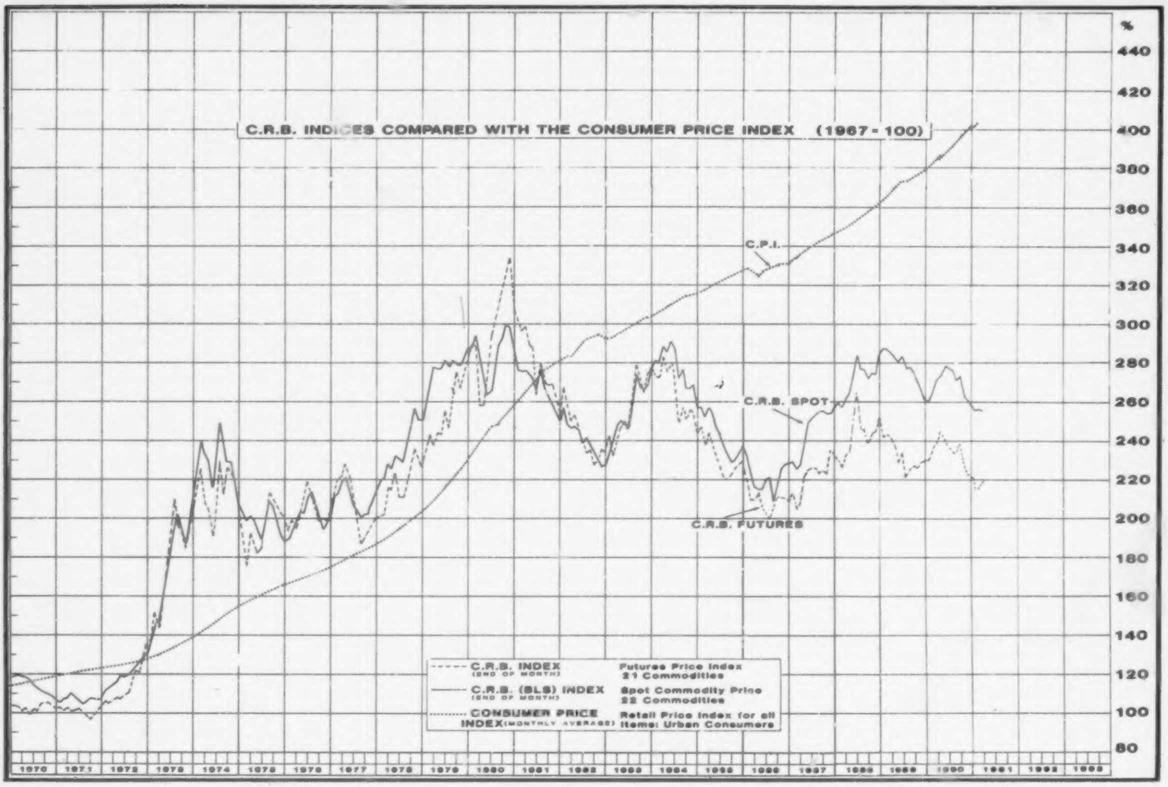


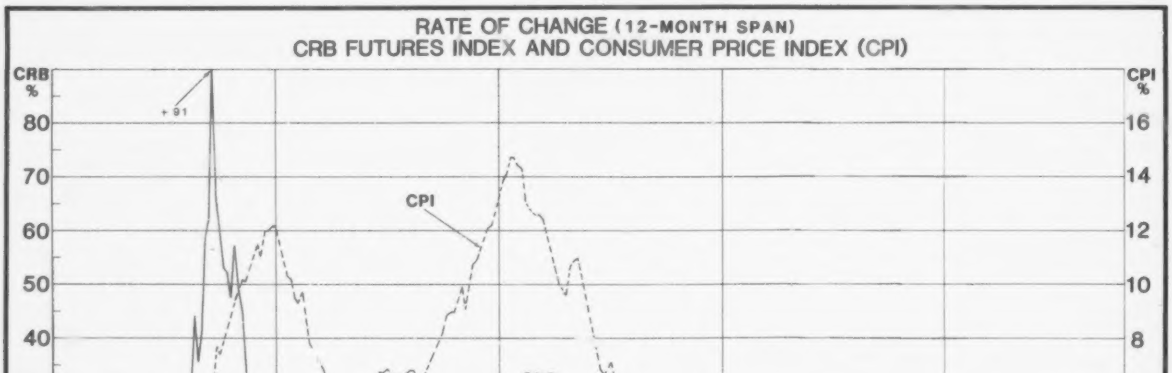
COMMODITY RESEARCH BUREAU FUTURES PRICE INDEX

(1967=100)

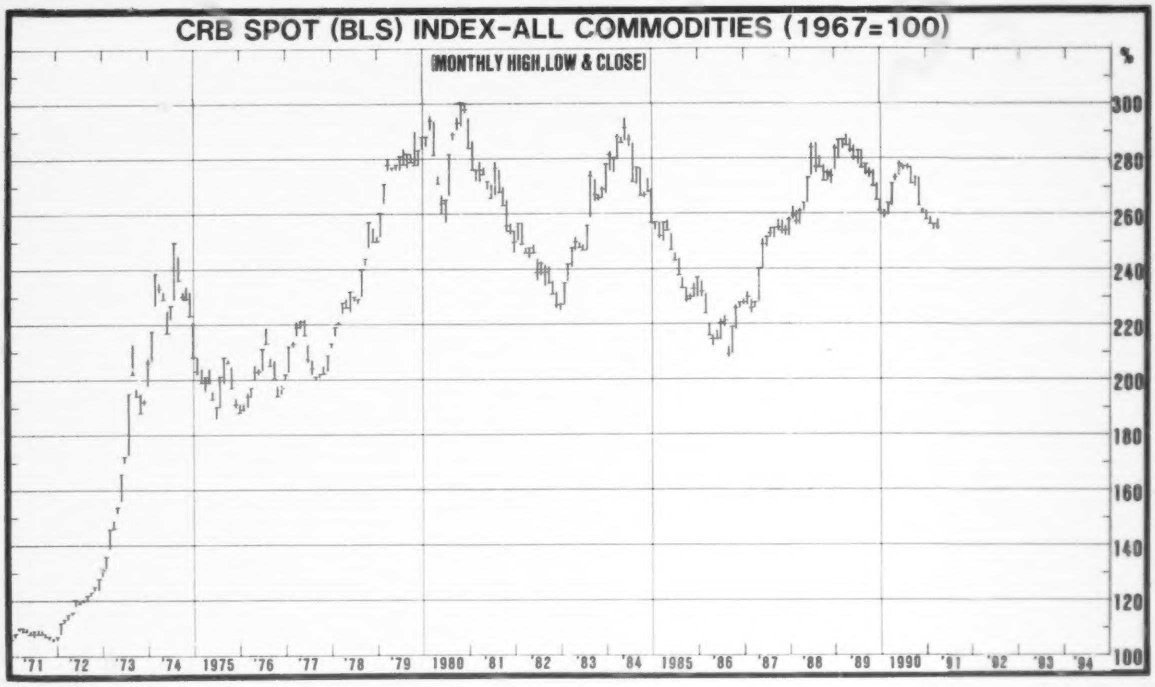
MONTHLY HIGH,LOW & CLOSE



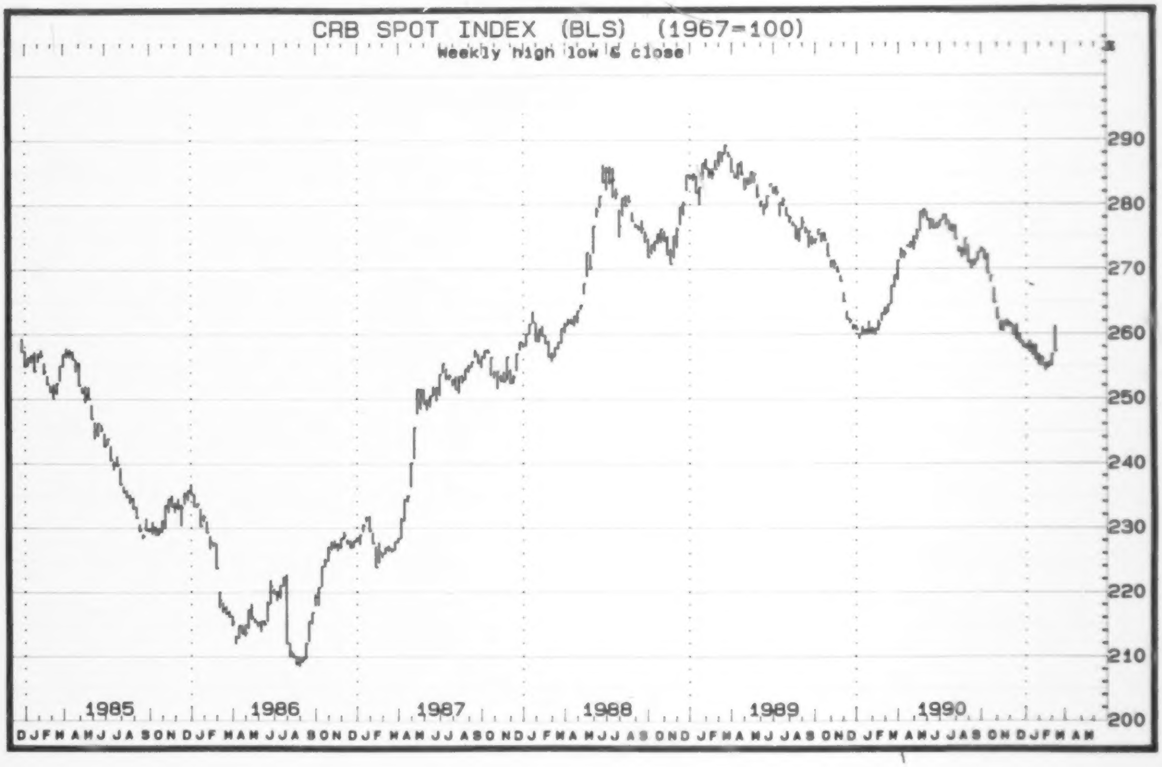
C.R.B. INDICES COMPARED WITH THE CONSUMER PRICE INDEX (1967 = 100)



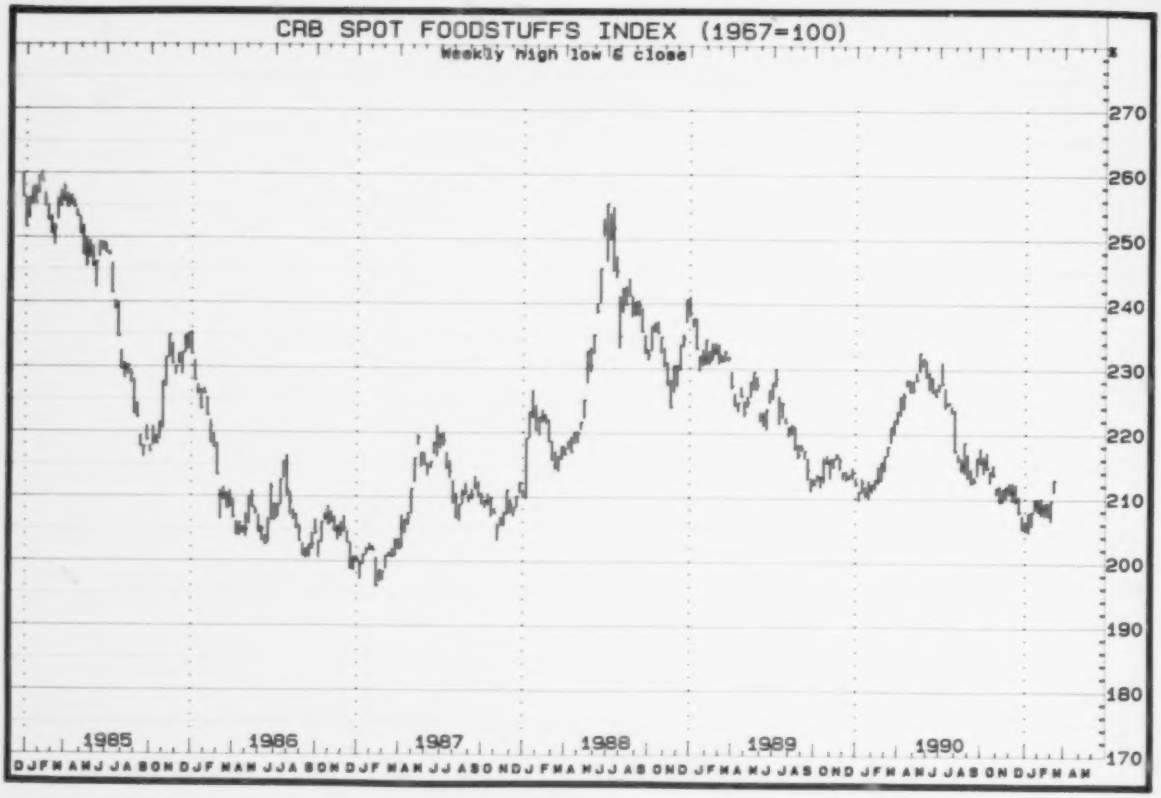
RATE OF CHANGE (12-MONTH SPAN)
CRB FUTURES INDEX AND CONSUMER PRICE INDEX (CPI)


CRB SPOT (BLS) INDEX-ALL COMMODITIES (1967=100)

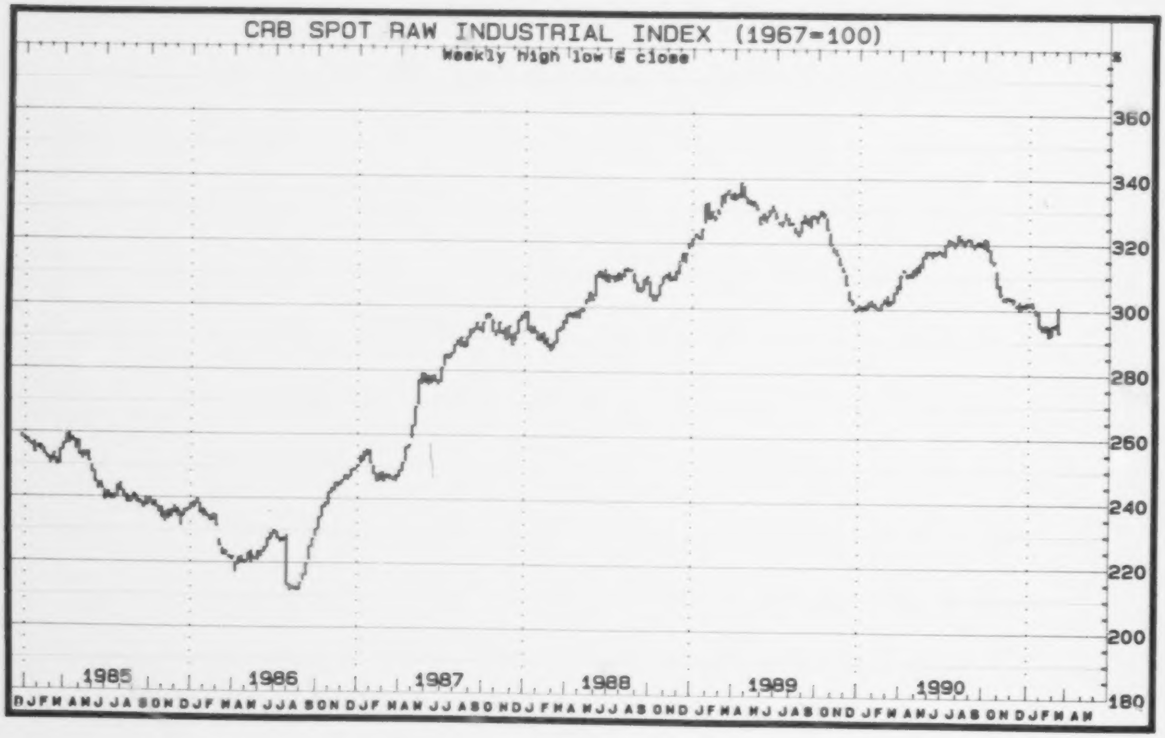
(MONTHLY HIGH,LOW & CLOSE)


CRB SPOT INDEX (BLS) (1967=100)

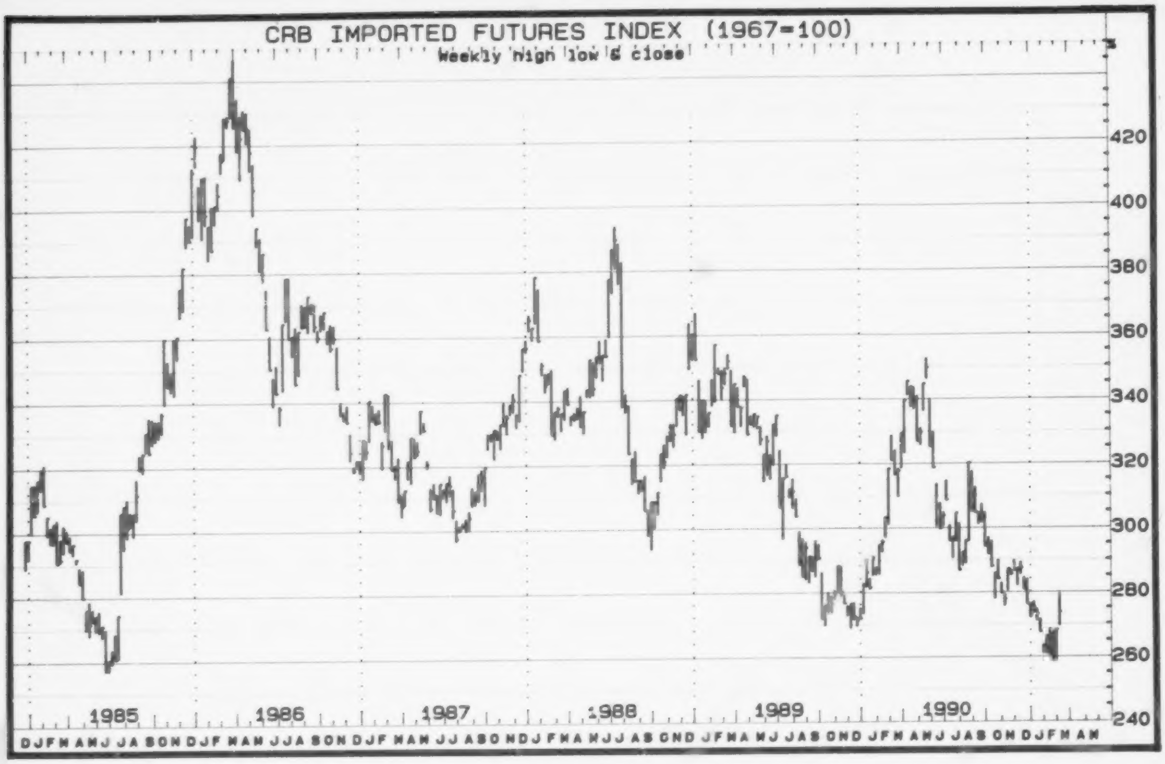
Weekly high low & close


CRB SPOT FOODSTUFFS INDEX (1967=100)

Weekly high low & close


CRB SPOT RAW INDUSTRIAL INDEX (1967=100)

Weekly high low & close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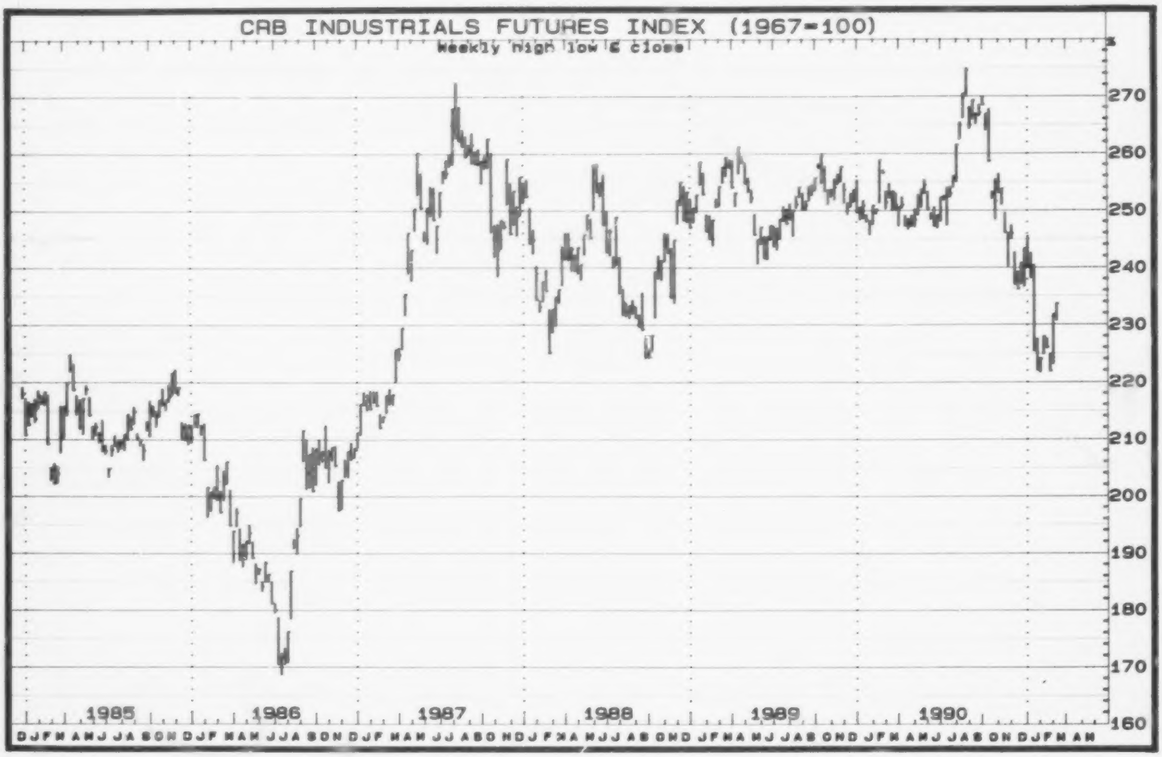
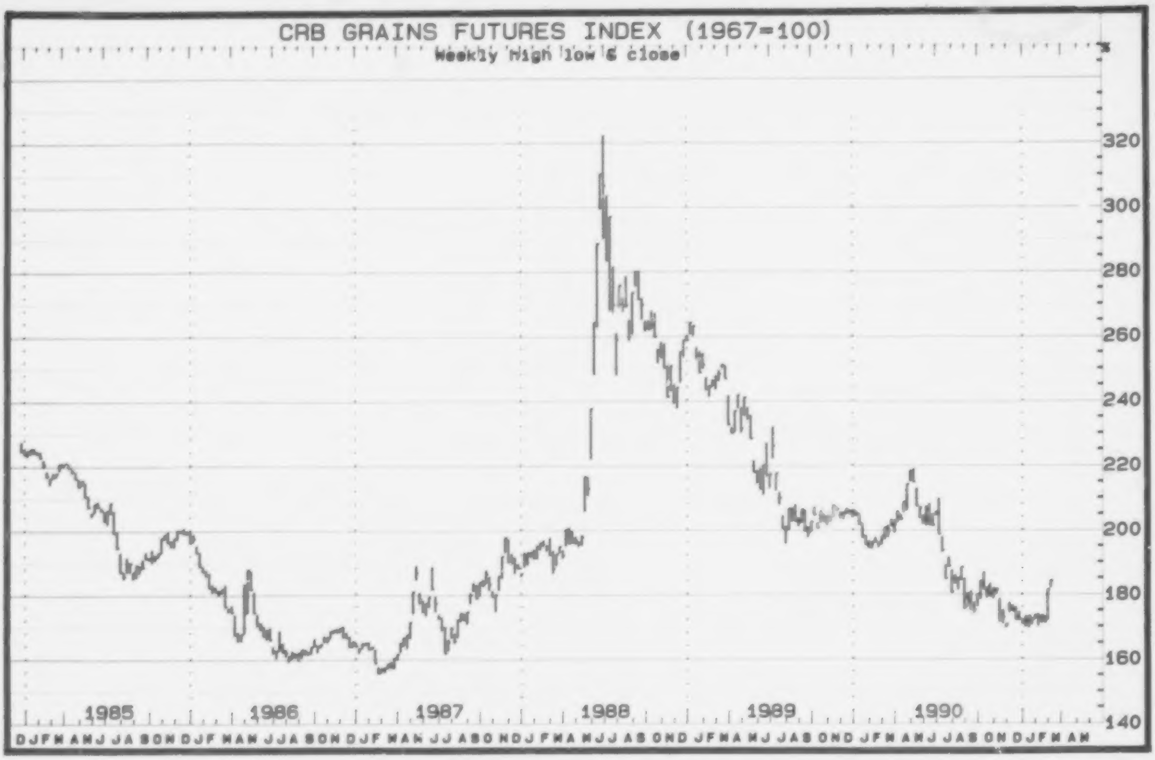
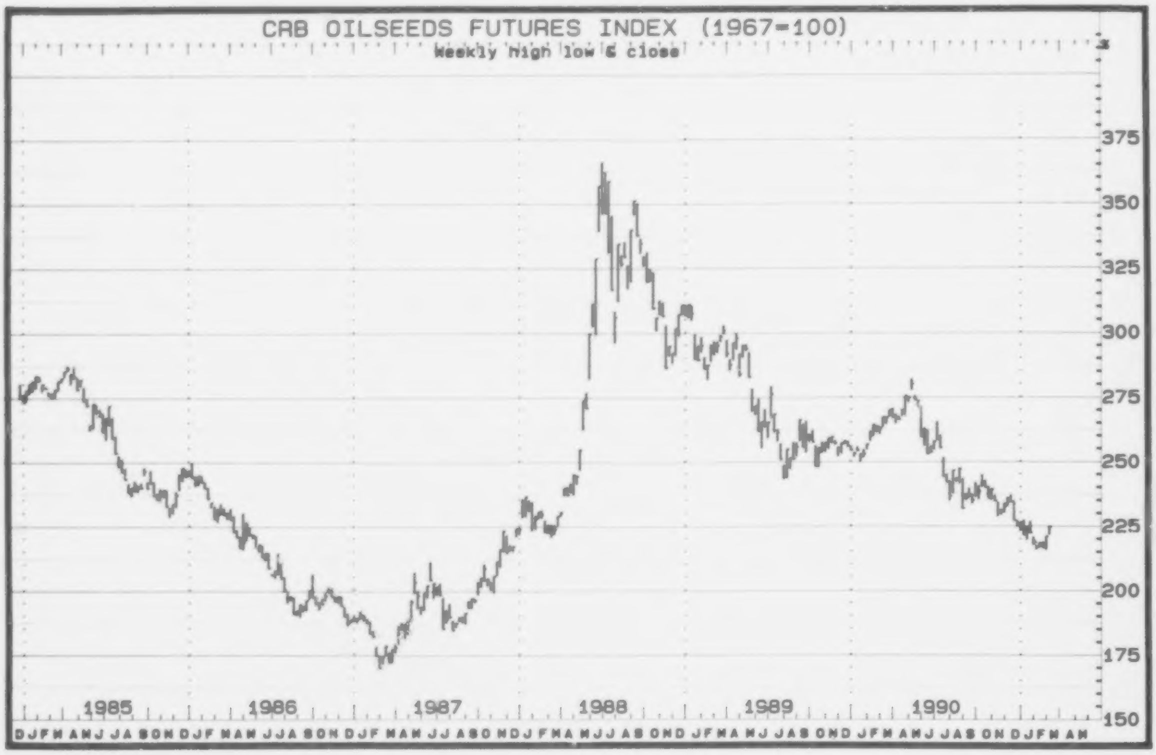
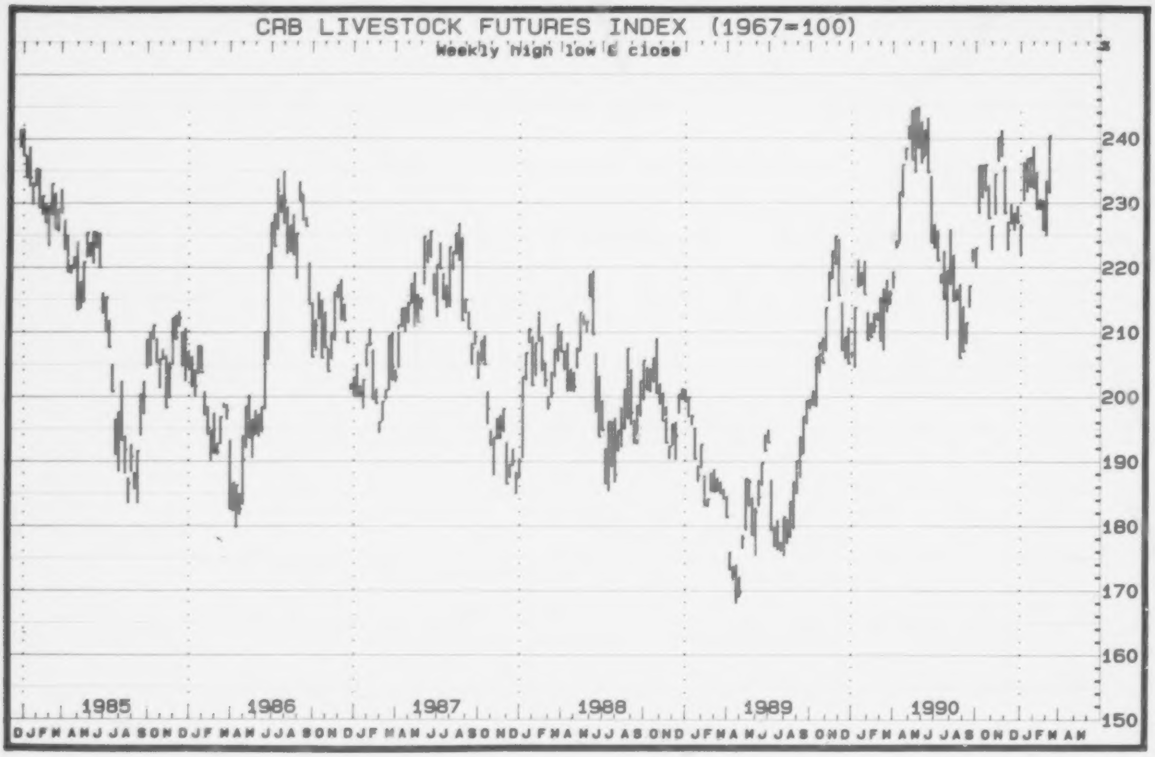
Weekly high low & close


CRB INDUSTRIALS FUTURES INDEX (1967=100)

Weekly high low & close


CRB GRAINS FUTURES INDEX (1967=100)
Weekly high low & close
%
320
300
280
260
240
220
200
180
160
140
1985
1986
1987
1988
1989
1990
D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M


CRB OILSEEDS FUTURES INDEX (1967=100)
Weekly high low & close
%
375
350
325
300
275
250
225
200
175
150
1985
1986
1987
1988
1989
1990
D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M


CRB LIVESTOCK FUTURES INDEX (1967=100)
Weekly high low & close
240
230
220
210
200
190
180
170
160
150
1985
1986
1987
1988
1989
1990
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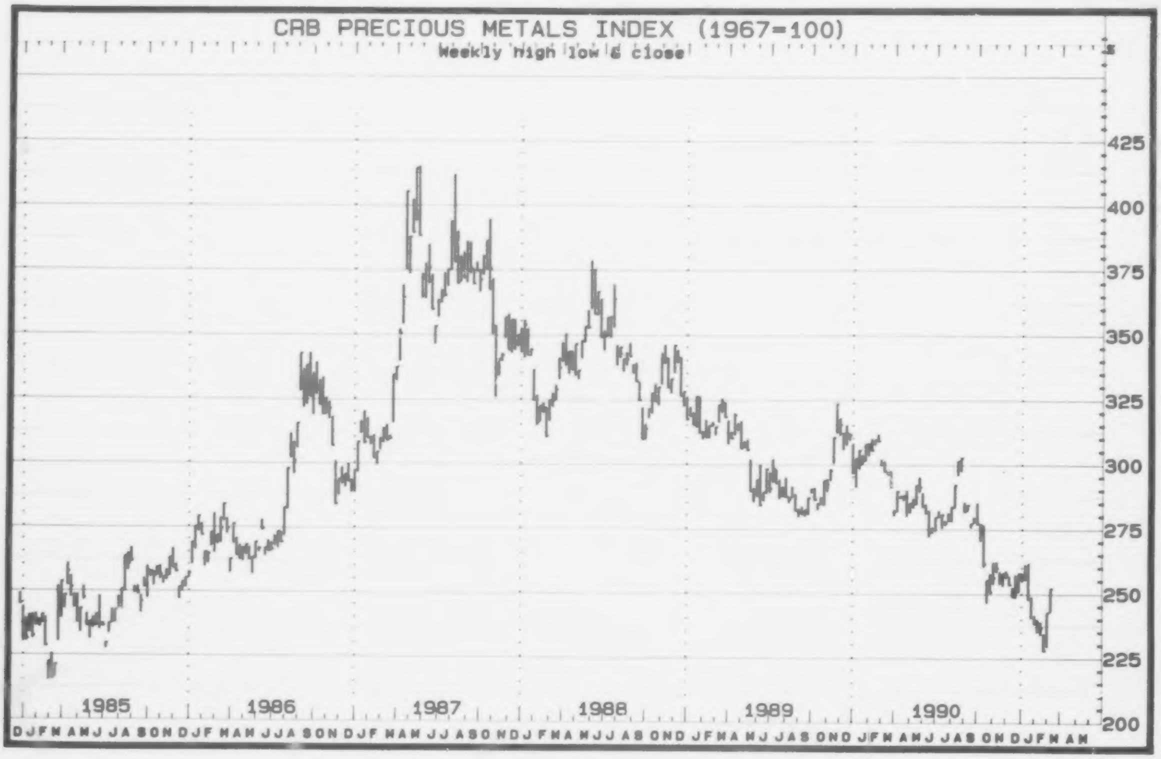
CRB PRECIOUS METALS INDEX (1967=100)
Weekly high low & close
425
400
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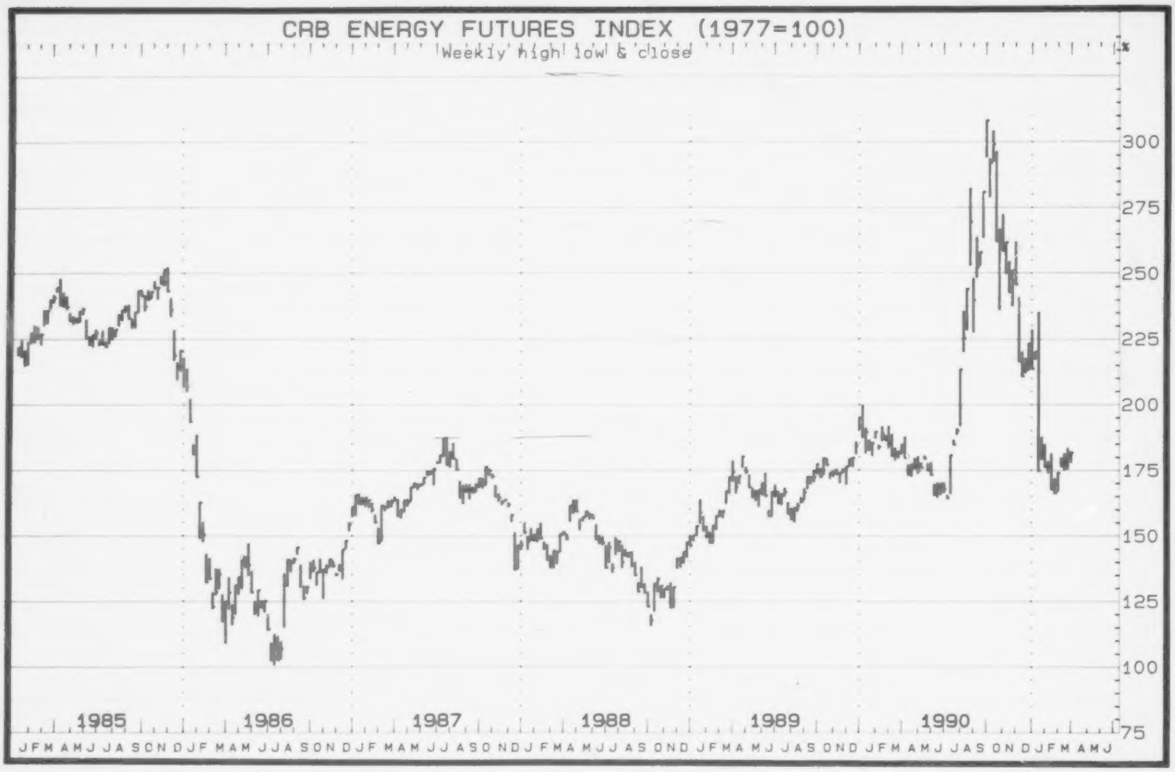
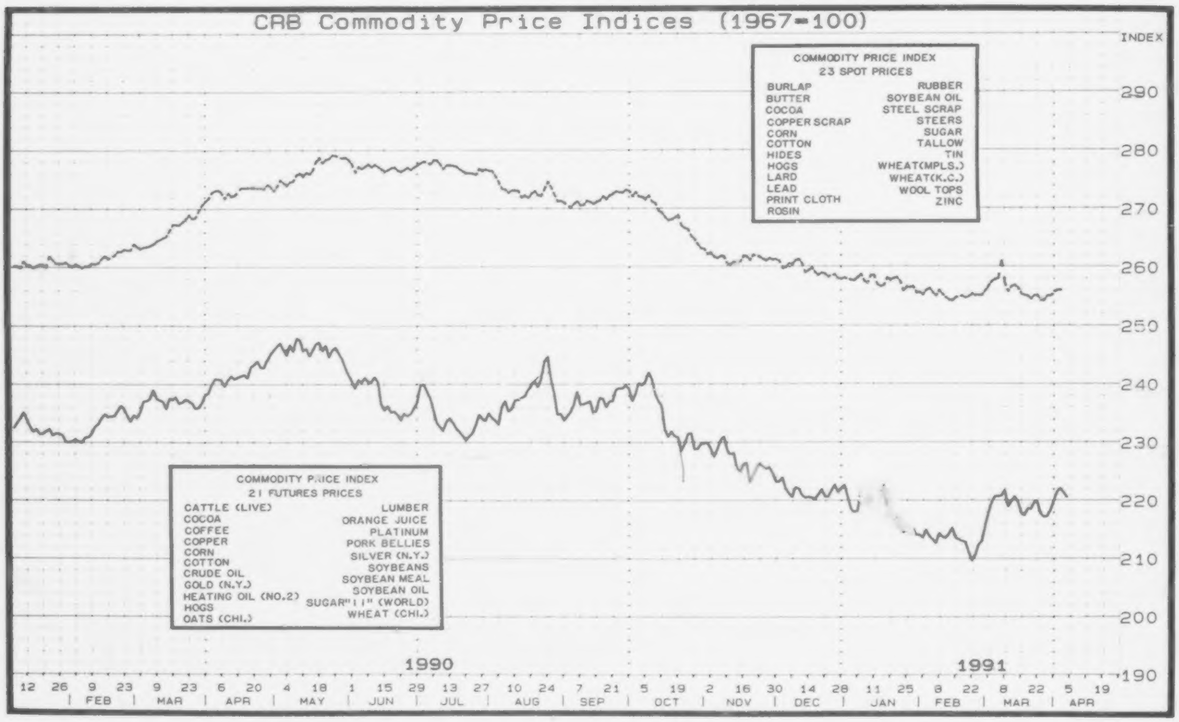

CRB ENERGY FUTURES INDEX (1977=100)

Weekly high low & close


CRB Commodity Price Indices (1967=100)

THE FLARE FOR NATURAL GAS FUTURES

BY GEORGE B. PARKER

Introduction

Growth in energy-related futures and options trading in the 1980s was explosive, and the momentum is likely to quicken during the 1990s. Educating the many potential and diverse market participants about the pros and cons of futures was an initial challenge to the New York Mercantile Exchange (NYMEX), which it met with admirable results. NYMEX evolved into the world's largest energy futures exchange, and its dominance is likely to grow, despite the emergence of other energy exchanges, such as London's International Petroleum Exchange (IPE).

While education laid the groundwork for energy futures, it would have proved fruitless were there not an economic need, and the 1980s proved that there was. The timing was right; indeed, futures have evolved into an integral part of the energy industry--from production through distribution to end users. Futures are the tool by which myriad market participants can evaluate current and prospective prices and, in turn, achieve some measure of protection against sharp and unpredictable price swings, which are not uncommon. The facts speak for themselves; in a very short time, energy futures have blossomed into markets that are now readily used by commercial and speculative participants around the world and around the clock.

It took much of the 1980s for NYMEX to develop a natural gas futures contract that would be acceptable to and used by the gas industry, meet the approval of the government's Commodity Futures Trading Commission (CFTC), and attract enough speculators to provide market liquidity. By now, all of this has happened and perhaps even faster than had been expected. Still, any concept that's reasonably new to an industry needs time to become accepted. Market participants need to determine 1.) the relationships between futures and natural gas prices (the basis) and 2.) delivery procedures in the futures market. Chances are that with time, and the knowledge and experience that comes with it, natural gas futures will be widely accepted. A strong case can be made that by the mid-1990s natural gas will be prominent in energy futures trading, if not among the top futures markets in terms of volume.

Unlike crude oil and its primary derivative products, gasoline and fuel oil, U.S. natural gas prices were--and to some extent still are--subject to government regulations which have tended to contain price swings and reduce the need for futures. However, a fifteen-year process of deregulating U.S. gas prices commenced in 1978, with the last traces of regulation scheduled to end on January 1, 1993. The need for natural gas futures was obvious by the late 1980s, and NYMEX inaugurated trading on April 3, 1990.

In the first summer and fall of trading, natural gas futures showed steady growth, and there was little reason to feel it wouldn't continue. Education has held the key, with participants moving along a learning curve; gas producers, distributors, and end users have begun to assess the benefits and pitfalls of futures trading. Knowledgeable individuals have to be in place, while management and stockholders of publicly held corporations recognize the economic benefits of futures. These benefits are likely to be realized as the 1990s unfold.

Two major factors will have a profound influence on the entire oil complex in the years ahead. Natural gas could prove the major beneficiary of some changes that are occurring.

1.) The 1980s witnessed a worldwide surge in environmental concern and the need for clean energy. Natural gas is the cleanest-burning fossil fuel, and because it is a gas, there's little danger of beaches or other areas being fouled. Although optimism in the early 1990s about diversifying natural gas applications likely exceeds what will happen, it's not unreasonable to expect natural gas to have an important role as a transportation fuel by the turn of the century. The associated technological problems are apt to prove more surmountable than the public's resistance to change.

2.) The 1990 Mideast crisis, triggered by Iraq, sparked a surge in oil prices, from which the long-run damage to producers is likely to prove greater than the short-term benefits from higher prices. The latter will awaken the need for the U.S. and other major oil-consuming nations to find alternative energy sources, if for no other reason than to limit their dependence on Mideast oil. The transition will take time, as the world is deeply dependent on crude oil. But even if the volatility in crude prices dissipates (unlikely as that seems), the seeds have been sown for finding alternative fuels. One of them is natural gas.

Ironically, summer 1990's jump in prices of crude and its products fostered some adverse reaction about the need for natural gas futures. Foreign events were seen as weighing too heavily on what some still view as an insulated U.S. product. At one time that might have been a justifiable view, but no longer. The energy market has evolved into a worldwide one which quickly reacts to fresh events. Natural gas is apt to become closely intertwined with the world oil market and to be sensitive to global price factors in the years ahead.

Futures trading in natural gas probably couldn't have come at a better time.

Natural Gas Futures Contract Specifications (as of late 1990):

1.) One contract equals 10,000 MMBtu (million British thermal units), or roughly 10 million cubic feet of natural gas.
2.) Prices are quoted in dollars and cents per MMBtu, as for example $2.50/MMBtu.
3.) The minimum price move is $.001 (one tenth of a cent) per MMBtu, which represents the equivalent of $10 per contract.
4.) The maximum price move in either direction from the previous day's settlement price is $0.10 (10 cents) per MMBtu, equivalent to $1,000 per contract. There is no maximum daily limit on prices during the month preceding the delivery month.
5.) Delivery months run consecutively up to one year ahead.
6.) The delivery location is the Sabine Pipeline Company's Henry Hub site in Louisiana.
7.) Trading hours are 9:20 A.M. to 2:30 P.M., New York time.
8.) Reportable position is 25 contracts or more in any calendar month.

Each gas contract represents roughly the same Btu content as 600 barrels of heating oil. In theory, one can spread 6 heating oil contracts against 10 natural gas contracts, or use the Btu equivalent prices to determine which fuel to buy for later consumption. But in practice, it isn't so simple because of the natural gas contract's basis risk.

A heating oil short may deliver on any day of the delivery month, and the long must take all the oil at that time. However, a natural gas delivery is a month-long flow. Gas is sold in one-month blocks. The short must send 1/30th of the gas, roughly 333.33 MMbtu per futures contract, each and every day of the delivery month to the pipeline interconnection delivery point.

Futures Trading Terminology: Key Terms

Futures - Standardized contract for the purchase or sale of a commodity which is traded for future delivery under the provisions of exchange regulations.

Delivery month - The month specified in a given futures contract for delivery of the physical or cash commodity.

Open interest - The number of futures contracts in existence at any given time which have not been satisfied by an offsetting sale or purchase, or by the actual delivery of the commodity. (Also referred to as open commitment.)

Basis - The price differential that prevails at any given time between futures and the comparable cash or spot price of the same commodity.

Cash commodity - The actual, physical commodity traded in the spot market through terms determined by the parties involved, whereas in futures, specific standards have been set.

Hedging - The initiation of opposite positions in the cash and futures markets. Ideally, equal quantities should be involved, but in actual practice the futures position may have more or less than the offsetting quantities in the cash transaction. Hedging is the primary economic justification for futures in that it's a form of financial protection against adverse price swings in the cash market. Commercial market participants are hedgers; typically, producers are short futures to protect against eroding values of inventory, while users tend to be long futures as a protection against rising prices when the product has yet to be acquired.

Long position - The position of a futures contract buyer whose purchase represents an obligation to accept delivery for the contract month positioned, unless the trade is liquidated (offset) with an offsetting sale.

Short position - The position of a futures contract seller whose sales represents an obligation to tender delivery for the contract month positioned, unless the trade is liquidated (offset) with an offsetting buy.

Straddle - Also termed a spread; it represents the purchase of one futures delivery month against the sale of a different futures month of the same commodity. The rationale for trading a straddle is the changing price relationship between two months. Such positions are also termed intramarket spreads. If done between two different, but related, commodities, it is called an inter-market spread.

Settlement price - The final established price at the end of a day's trading, though it may not necessarily be the last traded price. Settlement prices are used to determine margin calls and invoice prices for delivery purposes.

Margin - Funds or good faith deposits against a futures contract to guarantee fulfillment of contract obligations. Minimum margin requirements are set by the exchange; brokerage firms can require more than the minimum, never less.

Spot month - The futures contract closest to maturity. Typically, the spot or nearest futures trade at a discount to deferred futures, as the latter reflects the cost of carrying inventory, including warehousing and financing costs.

Natural Gas--What is it?

The composition of natural gas varies, depending upon where it is found. Generally, methane is the major component, accounting at times for as much as 95 percent of the total gas mixture. Other gases often found with methane include nitrogen, hydrogen, helium, and varying amounts of hydrocarbon compounds. Natural gas deposits are not necessarily found along with petroleum deposits, but can be some distance away in sandstone and limestone formations. (a case can be made that natural gas deposits are not an end product of oil formations, but are of independent origin.) Because of its flammability and high calorific value, natural gas is used primarily as a heating fuel and illuminant.

Towards the end of the last century, the large industrial cities in the U.S. began to make increasing use of natural gas, and pipelines were constructed to conduct the gas from producing to consuming sites. Demand, increased sharply after World War II, and by 1970 consumption was so large that imported gas was needed, while restrictions were considered on the use of natural gas.

Gas consumption is highly seasonal, being greatest during the heating season, which an unexpected or prolonged cold snap can intensify. Demand subsides considerably during the warmer months.

Important Definitions

Liquified natural gas (LNG) - Natural gas that has been pressurized and cooled to minus 258°F to liquify it for convenience in shipping and storage. LNG did not become commercially feasible until cryogenic technology, using extreme cold, found ways to liquify and maintain natural gas in a liquid state. Another restraint on LNG production is the weight of the containers needed to confine LNG.

Gas well - A well completed for the production of natural gas from one or more gas zones or reservoirs. Wells producing both crude oil and natural gas are classified as oil wells.

Natural gas wellhead price - The annual wellhead price of natural gas is determined by dividing the total reported value at the wellhead by the total quantity produced. The price includes all costs prior to shipment from the lease, including gathering and compression costs, plus various state production costs.

Base gas - The volume of gas needed as a permanent inventory to maintain adequate underground storage reservoir pressures and deliverability rates throughout the withdrawal season. All native gas is included in the base gas volume.

Working gas - The volume of gas in an underground storage reservoir above the designed level of the base. It may or may not be completely withdrawn during the withdrawal season. Depending upon conditions, the total working capacity could be used more than once in a season.

Reservoir repressuring - The injection of natural gas into oil and gas reservoir formations for pressure maintenance and cycling.

Synthetic natural gas (SNG) - A product resulting from the manufacture, conversion, or reforming of hydrocarbons that may be easily substituted for, or interchanged with, pipeline quality gas.

Natural gas storage - Gas in storage at the end of a reporting period may not equal the quantity derived by adding or subtracting net injections or withdrawals from the quantity in storage at the end of the previous period. The difference is due to changes in the quantity of native gas included in the base gas and/or losses in base gas, due to migration from storage reservoirs.

Extraction loss - The reduction in the volume of natural gas resulting from the removal of natural gas liquids constituents at natural gas processing plants. Natural gas liquids include ethane, propane, butanes and pentanes.

Unaccounted for - Reflects the difference between the sum of the components of natural gas supply and the sum of components of natural gas disposition. The differences may be due to quantities lost or to reporting problems.

British thermal unit (Btu) - The amount of energy required to raise the temperature of 1 pound of water 1°F at or near 39.2°F. One cubic foot of natural gas contains 1,031 Btu. But for most purposes, one can assume one futures contract contains 10 million cubic feet (10 MMcf.).

Consumption - The total includes pipeline fuel use, lease and plant fuel use, and deliveries to consuming sectors.

Natural Gas Regulatory Policy

U.S. natural gas pricing, at least until 1978, when the Natural Gas Policy Act was enacted, was regulated throughout the distribution system, specifically from wellhead to burner tip, i.e. point of end use. However, producers who sold gas only in their own state (intrastate) could do so at free market prices. Interstate (between two or more states) pricing controls applied to most of the gas moving through the nation's vast pipeline system.

For producers who sold into the interstate market to purchasing pipeline companies, the maximum price they could receive was set by the Federal Power Commission (FPC), now called the Federal Energy Regulatory Commission (FERC).

The interstate pipelines carried the gas to "city gates" where it was then sold to local distribution companies (LDCs), but at prices set by the FPC. However, the regulation morass was not yet over, as the LDCs distributing the gas to the end user did so at prices set by their state Public Utility Commission (PUCs). From a supply/demand viewpoint, natural gas price regulations had mixed results. Consumers enjoyed the benefit of stable and low prices, but the system failed at times to achieve the intended goals of ensuring adequate natural gas supplies at fair prices, especially during the demand-intensive winter. Ultimately, it was recognized that, on balance, regulation of natural gas did not work, and the first important step in deregulation that began in 1978 was a phased decontrol of wellhead prices.

While the intention was laudable, the timing was not. Decontrol led to increased supplies, but the late 1970s saw overall energy demand slowing, owing to a combination of greater consumer conservation and a recession. Pipeline companies who were locked into long-term (take or pay) contracts for high-cost gas could not take advantage of the increased competitive environment, and producers attempting to sell more gas opted to go directly to the local distribution companies and end users. Once again, intentions backfired, as the interstate pipelines are basically under private ownership and not obligated to transport gas sold directly from producers to what is known as downstream markets.

Nevertheless, a free-market philosophy was taking hold within the natural gas industry, abetted by more flexible federal energy regulatory policies, which included ways to increase competition and expansion of the direct sales market. New marketing approaches are already in place. The smaller gas producers and consumers are now more deeply involved with direct sales owing largely to a new breed of entrepreneur in the industry: marketers, who purchase gas from producers to obtain purchase commitments and then find sellers. Or they may simply be brokers. In either case, competition is and will be increasing. All major interstate pipelines now seek what is known as open-access certificates to transport gas for other producers on a non-discriminatory basis, and more pipeline capacity is expected to be approved by the FERC. Attempts are also being made to enhance the efficiency of existing pipelines. Most importantly, however, all wellhead price controls will be gone in 1993, by which time it's likely that the industry, from gas producers to end users, will be familiar with and have experience using natural gas futures.

For example, when wellhead prices are fully decontrolled, how will one determine a clear reference price for natural gas? Futures can give a viable clue, as a going market price will be publicly available for all interested parties, and it will enable those parties to hedge against unforeseen price swings.

Fundamental Analysis of Natural Gas

If the world were perfect, predictable, and risk free, there would be no need for analysis, but obviously this is not the case. Typically, any price analysis relies on past events that can serve as a reference to the reasons for prevailing and prospective prices. The past regulatory restraints on natural gas, however, cloud the picture, but that doesn't mean that the time tested basics are not applicable. Some specific supply/demand factors for natural gas are quite likely to persist.

Demand Factors

In the U.S., residential demand for natural gas generally accounts for about 25 percent of total consumption. During 1980 through 1985, residential deliveries averaged 4,550 billion cubic feet/per annum, about 25 percent of total annual consumption of 18,225 billion cubic feet. (Table 1.) In 1987, the percentage was closer to 26 percent. Residential gas use is primarily for space and water heating, cooking, and clothes drying. Almost two-thirds of all U.S. homes have some gas service, with more than half using gas for heat. Much to the chagrin of heating oil suppliers, more than half of all new, single-family homes use natural gas, owing partly to improvements in gas furnace efficiency, and wider swings in domestic heating oil prices, either owing to below-normal temperatures as in the U.S. Northeast in late 1989, or to concern over the availability of crude oil supplies, as in the wake of the mid-1990 Mideast crisis. (Table 1.)

However, unless the higher cost of competing fuels, notably heating oil, is seen as permanent, there isn't likely to be much change in consumer

Table 1. U.S. Natural Gas Consumption by End Use Sector (billion cubic feet)

	Residential	Commercial	Industrial	Electric Utilities	Miscellaneous	Total Consumption
1980-85 avg.	4,550	2,521	6,305	3,269	1,580	18,225
1986	4,314	2,318	5,579	2,602	1,408	16,221
1987	4,315	2,430	5,953	2,844	1,668	17,211
1988	4,630	2,670	6,383	2,636	1,709	18,028
1989	4,748	2,697	6,842	2,768	1,756	18,812
1990 est.	4,700	2,600	6,800	2,750	1,700	18,550

Source: U.S. Energy Information Administration

preference. It can take several years to recoup the investment in a new gas furnace through lower heating bills. During the demand-intensive heating season, gas prices will trend higher, with the short-term determinant being the number of heating degree days, a measure of the severity of winter temperatures. Consumers are not adverse to adjusting their thermostats, especially if the economy is soft, the effect of which can arrest natural gas demand.

Natural gas is also the preferred fuel in commercial buildings, with demand variables similar to residential use, but to a lesser magnitude. During 1980-85, commercial use averaged 2,521 billion cubic feet, or about 14 percent of total natural gas consumption, and the percentage was the same in 1987.

Slightly more than half of U.S. consumption of natural gas is by the industrial and electric utility sectors, with the former being the larger component. Indeed, industrial demand accounts for about a third of total gas use, having averaged 6,305 billion cubic feet in 1980-85, or almost 35 percent. Electric utilities averaged 3,269 billion cubic feet, or about 18 percent, of total average consumption of 18,225 billion cubic feet (mentioned above). Natural gas is used for steam and power generation by utilities and in manufacturing applications by the industrial sector.

The seasonality of demand is underscored by the change in use from winter to summer, as residential and commercial demand falls by more than 75 percent, while industrial use declines by about 25 percent. However, the price differential between gas and fuel oil is more sensitive in the industrial sector, where the boiler facilities are apt to offer more opportunity to switch fuels. The latter is probably more likely in the electric utility sector, which often has dual-fuel facilities. Environmental factors, however, may now temper utilities' readiness to alternate fuels, even though the price differential at any given time may favor residual fuel oil use over gas. Electric utility demand for gas is greater in summer than in winter, owing to air conditioning usage; indeed, a hot summer could cause utility natural gas demand to be almost twice that seen in the winter.

Slightly less than 10 percent of gas use is by what is known as pipeline use (gas consumed in the operation of pipelines, mostly compressors) and as lease and plant fuel. The total use is generally too small to have any effect on price. It's possible that by the turn of the century, a consumption column will be allocated to transportation as an end use for natural gas, but in the early 1990s, the use is negligible relative to total consumption.

Natural gas deliveries to end users have strong seasonal patterns. Except for the utilities, deliveries are highest during the colder months, specifically December and January. Demand starts to ebb in February, generally reaching its nadir in September before the seasonal upswing in deliveries starts. Electric utility deliveries are counter-seasonal, peaking in July or August with the low typically reached in the Dec.-Feb. period.

Supply Factors

The U.S. is basically self-sufficient in natural gas, although total recoverable reserves are uncertain. A conservative total seems to be fifty to sixty years' supply, based on current consumption. But a case can be made that price regulation restrained exploration, and with deregulation in progress, the exploratory constraints are likely to be lifted. In either case, new production accounts for the bulk of available supply, though some gas is stored, from which withdrawals are largely a function of the severity of winter weather. Imports, mostly from Canada, supply about 5 percent of U.S. needs, a share that might grow in the 1990s as pipeline capacity increases. Small amounts of natural gas have been imported at times from Mexico, and LNG is imported from Algeria via tanker. (The U.S. does export some gas to Mexico and Canada, and sells LNG to Japan.) (Table 2.)

Production shows a strong seasonality, peaking during the demand-intensive heating months when prices are high, and ebbing with the passing of winter and lower prices.

Other factors influencing production include

Table 2. U.S. Natural Gas Production (billion cubic feet)

	Gross Withdrawals 1/	Repressuring 2/	Marketed Production (wet)3/	Extraction Loss	Total Dry Gas Production 4/
1980-85 avg.	20,332	1,511	18,484	793	17,692
1986	19,063	1,838	16,791	800	15,991
1987	20,056	2,208	17,349	812	16,536
1988	20,880	2,471	17,808	816	16,992
1989	20,937	2,420	17,955	841	17,115
1990 est.	21,200	2,450	18,000	850	17,400

1/ From gas and oil wells

2/ Injection of natural gas into oil/gas formations for pressure maintenance and cycling purposes

3/ Gross wet withdrawals less gas, used for nonpressuring, nonhydrocarbon gases removed, vented and flared

4/ Marketed production, less extraction loss

Source: U.S. Energy Information Administration

pipeline capacity constraints, producer cash-flow needs, and producer marketing intentions. In recent years, the last two factors appear to have caused off-season production to remain above expectations, which in turn depressed prices.

Table 3. U.S. Underground Storage of Natural Gas - end of period (billion cubic feet)

	Base Gas	Working Gas	Total	Storage Activity Injections	 Withdrawals	 Net Change
1986	3,819	2,749	6,567	1,952	1,812	140
1987	3,792	2,756	6,548	1,887	1,881	6
1988	3,800	2,850	6,650	2,174	2,244	-69
1989	3,812	2,499	6,311	2,212	2,566	-353
mid-1990	3,840	2,459	6,299			

Source: U.S. Energy Information Administration

To help contain excess supply at times, some 10 to 15 percent of domestic annual dry gas production is stored (and an almost equal amount withdrawn), but the procedure is not as easy as it is for petroleum products. Gas is stored in abandoned, hollowed-out salt domes, or in depleted underground reservoirs that are well sealed. In storage, not all of the gas is readily available. Perhaps almost half the volume may be base gas, in effect a permanent inventory, to maintain the proper pressure within the storage pool from which the working gas above can be withdrawn. Available storage capacity changes little from year to year. The movement of gas into and from storage is largely a function of a winter's severity, in that sustained cold will trigger greater withdrawal from storage that then has to be replaced (injected) later in the year. It appears, however, that natural gas storage factors are being viewed with greater emphasis as a marketing management tool; this could have the eventual effect of flattening the seasonality of cash price movements to some extent. (Table 3.)

While natural gas is consumed in all 50 states, five states--Texas, Louisiana, California, Ohio, and Illinois--account for half of U.S. consumption. (The Northeast, however, may be the leading growth area in the years ahead if utilities reduce their reliance on oil.) Production is concentrated in Texas, Louisiana, and Oklahoma, which together provide as much as 75 percent of U.S. output. The U.S. Department of Energy (DOE) places proven reserves at ten times annual production, but concedes that potential gas supplies are more extensive than previously thought. However, the physical existence of potential supplies does not necessarily equate to supply availability. Perhaps as much as one-third of potential supply is located in federal offshore areas that have been subject to exploration and drilling moratoria. Moreover, development of the coastal plain of Alaska's Arctic National Wildlife Refuge is banned. While a case could be made that federal funding for natural gas research and development has been inadequate, if the latter were in place, perhaps we would have a better handle on domestic reserves. Consumption is more discernible. (Table 4.)

The two central issues that impact the U.S. gas supply outlook are deliverability and, on a longer term basis, the controversy over drilling and reserve data. It is widely believed that through this decade there's more than enough natural gas to meet demand, and exploration is growing. In early 1990, U.S. gas drilling exceeded that of oil drilling. In the past, oil drilling generally outdistanced gas by about two to one. Gas technology is also on the rise, including greater use of directional drilling techniques as well as improved interpretation of geological data. Important strides are also anticipated for LNG.

On a global basis, proven natural gas reserves are estimated to total the energy equivalent of about 740 billion barrels of crude oil, for which proven reserves are thought to be almost 900 billion barrels. However, annual gas production is only about half that of crude oil. More than likely, world natural reserves are closer to 1.5 trillion barrels of oil, but that may be academic since the geographical distribution relative to demand centers is a factor that could impede production--

Table 4. U.S. Natural Gas: Major Supply and Disposition Statistics (billion cubic feet)

	Supply Dry Gas Production	 Withdrawals from Storage	 Imports	 Total Supply/ Disposition	*Disposition* Additions to Storage	 Exports	 Consumption	 Unaccounted for
1980-85 avg.	17,629	2,139	923	20,893	2,154	54	18,225	460
1986	15,991	1,837	750	18,692	1,984	61	16,221	427
1987	16,536	1,905	993	19,534	1,911	54	17,211	359
1988	16,992	2,270	1,294	20,657	2,212	74	18,028	344
1989	17,115	2,586	1,382	21,220	2,212	107	18,812	89
mid-1990 est.	8,705	1,143	723	10,650	1,124	43	9,978	-495

Source: U.S. Energy Information Administration

Table 5. Estimated World Natural Gas Reserves, Proven and Recoverable (trillion cubic feet)

	Proven Avg. Estimate	Recoverable Avg. Estimate
Western Hemisphere	521	1,700
Western Europe	206	400
Middle East	1,138	2,000
Africa	240	525
Asia	257	675
Non-Free World	1,532	2,500
Total	3,896	7,800

Source: Compilation of estimates from various sources

transportation and storage of natural gas is costly. While a significant increase in world gas consumption is likely, it's apt to take place where a viable transmission and distribution infrastructure is already in place and where natural gas is an established part of the energy mix. (Table 5.)

The outlook for global consumption and world trade (LNG) of natural gas is very promising, and over the next twenty years, consumption is projected to just about double from the mid 1980s. The most dynamic gains are expected to be in Eastern Europe, where consumption was estimated to have totaled about 25 trillion cubic feet in 1987; a quarter of a century later, it is expected to reach over 50 trillion cubic feet. Use in Western Europe is also seen as almost doubling. Meeting these estimates will largely depend on the costs and availability of competing fuels, but the 1990 Mideast crisis could prove the beginning of the end for the industrialized nations' dependency on crude oil. The World Bank has been encouraging developing countries to draw upon their own gas reserves and reduce their dependency on imported oil. If nothing else, natural gas is seen as having more supply security than oil.

It isn't the intention of this article to dwell on the use of natural gas as a transportation fuel. There's been no lack of media attention as to the advantages of natural gas vehicles in the wake of the 1990 Mideast crisis and the upward surge in gasoline prices. In the industrialized nations with heavy vehicle traffic, high gasoline prices bring on the wrath of consumers and political fist-shaking. Of course, talk is cheaper than action, and the latter is apt to wane as pump prices fall. Still, a push is on to find viable alternative fuels for transportation, and natural gas is in the forefront. But how much of an impact it will have by the turn of the century is anybody's guess.

Perhaps the switch from gasoline will prove extensive and price will be less of a factor as demand for cleaner air accelerates. Passage of stringent emission control legislation in California this year could prove the catalyst for similar demands throughout the U.S., but whether that benefits natural gas remains to be seen. Auto companies are geared for gasoline, and this situation is not apt to change quickly; the same might be said about consumers' propensity for gasoline.

So why the push for natural gas as a transportation fuel? A small demand already exists, mostly from companies running trucks. However, for the public it's been a non-event so far. Natural gas is cleaner burning (reportedly, emitting up to 90 percent less carbon monoxide and up to 80 percent fewer reactive hydrocarbons) and with a higher octane rating of about 130, versus around 90 for gasoline. Costwise, natural gas runs within a 50 to 80 cent range per gallon equivalent of gasoline. A major drawback is that natural gas tanks hold less gasoline equivalent, thus curtailing a driver's range and causing more frequent refueling stops. Still, this technological barrier is surmountable.

The cost of converting gasoline engines to natural gas is probably the major impediment, but should fall over time. The cost of such a conversion is now placed around $1,500. Few private cars are driven enough to make the changeover economically feasible, especially if the public perceives natural

Table 6. U.S. Natural Gas Prices, Annual Average ($/1,000 cubic feet)

	Pipeline companies			City	*Delivered to end users*			
	Wellhead[1/]	Imports	From Producers	Gate	Residential	Commercial	Industrial	Electric Utilities
1980-85	2.30	4.33	2.85	3.75	5.24	4.81	3.65	3.25
1986	1.94	2.53	2.39	3.22	5.83	5.08	3.23	2.43
1987	1.67	2.17	2.10	2.87	5.54	4.77	2.94	2.32
1988	1.69	2.00	2.13	2.93	5.47	4.63	2.95	2.34
1989	1.71	2.04	2.17	3.01	5.63	4.78	2.93	2.43
January 1990	2.23	2.04	2.42	3.25	5.42	4.99	3.47	3.01
February	1.87	2.25	2.18	3.10	5.63	5.05	3.34	2.76
March	1.67	1.99	1.94	2.95	5.58	4.94	3.02	2.37
April	1.60	2.00	2.17	2.84	5.62	4.84	2.78	2.29
May	na	2.08	1.98	2.81	5.97	4.65	2.65	na

1/ Based on monthly natural gas prices from four states: Mississippi, New Mexico, Oklahoma and Texas
Source: U.S. Energy Information Administration

gas prices as working higher with rising energy costs. Taxi companies, for example, might be inclined to consider the needed tank conversion. As it is, there are now test vehicles with special tanks that enable the driver to switch back and forth between natural gas and gasoline with a flip of a switch on the dashboard. Reportedly, drivers of such vehicles seldom use gasoline, except as a reserve fuel. At any rate, changes are occurring that may encourage the use of natural gas as a transportation fuel. It could prove more than a temporary alternative for gasoline, regardless of events in the Mideast.

Natural Gas Prices

Following the enactment of the Natural Gas Policy Act (NGPA) in 1978, wellhead prices have been determined by competition. Moreover, many of the public utility commissions allow local distributing companies to offer more flexible pricing. Thus, natural gas prices from wellhead to burner tip have become more unpredictable and volatile, and far more sensitive to variables that affect crude oil, such as trouble in the Middle East. Table 6 shows annual averages for natural gas prices across the spectrum and some hefty year-to-year price swings. Volatility is now even greater on a month-to-month basis, as evidenced by the high to low moves in wellhead and pipeline prices during the first quarter of 1990. Clearly, there has been a need for some effective price and/or risk management tool, and now one exists in the futures market.

The price of gas, however, is not simply a function of equating supply with demand and factoring in seasonal adjustments. Transportation is a key variable, specifically pipeline availability. In effect, those who control the flow of gas can control prices, in both the cash and futures markets. However, a factor that is not viewed as essential to futures prices is the movement of gas into and out of storage.

Natural gas prices are expected to trend higher through the 1990s from an average wellhead price in 1989 of about \$1.71/MMBtu (1990 dollars) to almost \$3.00 by the mid 1990s. Just how much oil prices will influence gas values is difficult to ascertain. It is believed that while falling oil prices can push gas prices lower, sharply higher oil values don't necessarily push up gas prices sharply. There are many uncertainties affecting natural gas prices, and the variables are likely to increase and further cloud what producers and users see as the right price for their needs. With price regulation nearing its end, price management through hedging is needed.

Using futures for hedging is practically an art, with complexities that have to be mastered, one of which is resisting the temptation to speculate on price moves. Proper and effective hedging requires a working knowledge of many factors, including the relationship of futures to cash prices (basis), seasonal factors affecting different futures months, and the relationship of the Henry Hub delivery price to other sites. One has to be cognizant of the effects of seemingly unrelated events that can distort futures prices for a brief time and influence a similar response in cash values, even if the rationale is hard to accept. Should the natural gas futures market develop into a major pricing tool, as seems likely, the chances for any one group influencing prices for a length of time will be minimal.

Not everybody hedges the same way. Price management varies, depending upon one's needs. End users of natural gas will generally seek to fix their needs and prices as early in the heating season as possible; producers prefer waiting, hoping for a cold winter and a price bulge. The end user, meanwhile, can use futures to effectively establish an inventory position at a known cost, but without the need for a hefty capital outlay or finding suitable storage for gas for future delivery. The end user concerned about a winter price rise would employ a long hedge (buying futures), while the producer fearing a mild winter and lower prices would use a short hedge (selling futures). Of course, these participants might opt to ignore futures, with end users trusting to luck that the winter would be mild, while producers hope for just the opposite. There are costs involved with futures hedging. Margin has to be placed with a brokerage firm, although it can be in T-bills with the interest accrued to the customer. And there are commission charges. Moreover, management has to determine who is responsible for placing hedges--the purchasing manager, treasurer, etc.--a fact of corporate life that is not often easily decided.

Ultimately, to hedge or not to hedge depends on how a company identifies its financial risk with the pricing of natural gas. There are times when hedging could prove detrimental; it may not apply to specific needs, as the basis risk might exceed the price risk. Typically, producers and pipeline companies would use short hedges, local distributors and end users would favor long hedges, while marketers could go either way.

Putting together a perfect hedge is highly unlikely, as it would imply being able to offset an anticipated cash transaction in futures equaling the exact quantity of natural gas in question, for specific time and delivery location. Also, it must be recognized that hedging is not a management tool designed to make money, but to minimize the risk of adverse price swings in the cash market.

Example: Short-hedge - Producer

May 1
Cash Market
Intends to sell 150,000 MMBtu in July to be priced at delivery time. Spot price at time $1.70
Futures Market
Sells 15 July futures at the quoted price of $1.70.

June 20
Cash Market
Producer locks in cash transaction for July delivery at $1.60.
Futures Market
Buys back the 15 July contracts at $1.60.

Result: If producer had not hedge a loss of $0.10/MMBTU would have been realized, but with the hedge, the cash market loss would have been offset with a $15,000 gain for selling futures at $1.70 and buying the position back at $1.60. Cost: commission charges and up front margin. In effect, it was a wash.

However, if cash prices rose during the spring and there were no hedge, the producer, having guessed the market right, would have been better off, as the gas would have realized a greater return. With the hedge, the initial short position would have been purchased back at a higher price, resulting in a loss that offsets the gain in the cash transaction--in effect a wash. At times, hedging may not seem appropriate, especially with hindsight. But, since we don't have accurate foresight, futures are needed.

Example: Long Hedge - Marketer

May 1
Cash Market
Sells to an end user 150,000 MMBtu for delivery in July at a fixed price.
Futures Market
Buys 15 July futures contracts at $1.70.

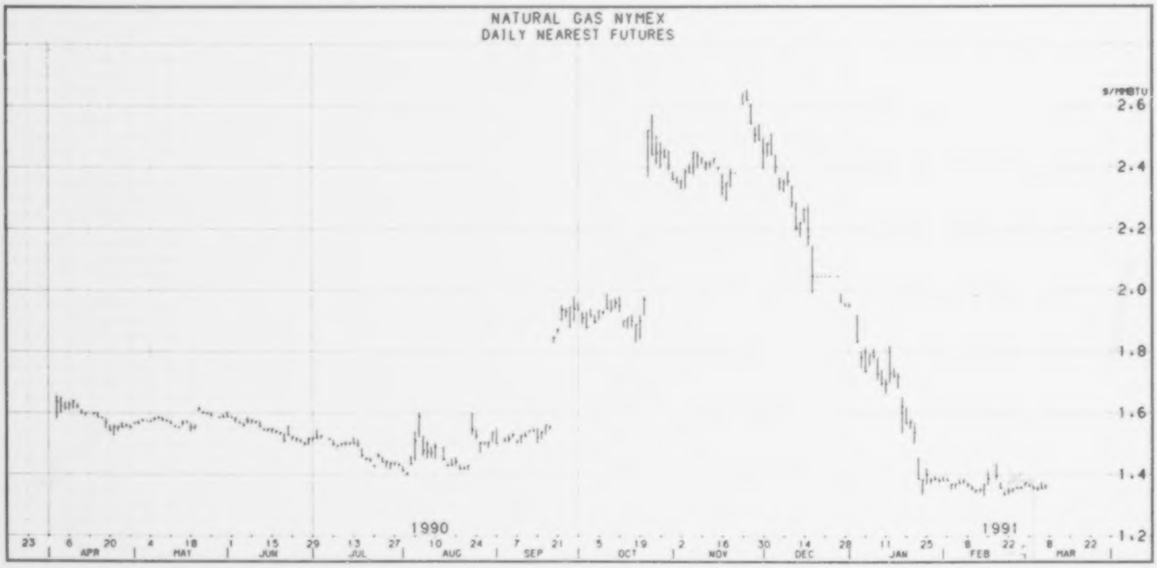
June 20
Cash Market
Marketer buys equivalent amount of gas from producer at $1.80, which is more than he expected to pay when the contract was made.
Futures Market
Sells 15 July contracts at $1.80.

Result: While the marketer lost money on the cash transaction to cover his short sale, the loss was offset by the profit in futures. Conversely, if cash values had declined into June, there would have been a loss on the futures contract.

Regardless of the transaction from producer to end user, price risk is involved, some of which is offset by futures. Moreover, for the first time natural gas participants have the opportunity to look to futures to obtain an indication of what gas prices may be at some time down the road. Values will reflect what diverse market participants at the present time feel prices will be, but obviously they all cannot be right.

Conclusion

New marketing methods are needed to keep pace with energy developments and the quickness with which prices can change. For the oil and product markets, futures have proven invaluable. The same should be true for natural gas, as demand for physical product is likely to show good growth in the U.S. and abroad, and as deregulation brings the need for price management. Natural gas futures are new to the industry, but chances are the market will mature rapidly.



SEASONAL VOLUME AND OPEN INTEREST ANALYSIS

BY KENNETH SHALEEN

Interpreting volume and open interest statistics has always been important to technical analysis in the futures markets. Prior to the introduction of financial futures in 1972, agricultural products were the dominant futures traded. The life cycles of the commodities are associated with seasonal factors that cannot be overlooked.

For many years, the Commodity Research Bureau has compiled graphs revealing seasonal patterns in futures volume and open interest. The most recent update encompasses the 10-year period from 1979-1988. Included for the first time are seasonal studies of financial instrument futures, such as the interest rate and foreign exchange contracts. Does seasonality exist in those markets? If so, how does a technician use the information? This article will examine some of the technical ramifications, especially for the more recently introduced financial futures.

Definitions

Volume - The number of futures contracts traded during each trading session. Buy volume always equals sell volume. Published volume figures represent one side only. Volume is a measure of urgency.

Open Interest - The summation of all unclosed purchases or sales at the end of a trading session. Long open interest always equals short open interest. Published open interest figures represent one side only. Open interest provides fuel to sustain a price trend.

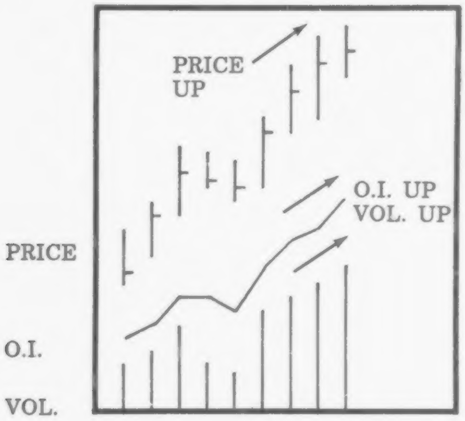
Traditional Technical Analysis

Volume and open interest changes are used by technicians to measure the health of a price trend. The generally accepted rule is:

Volume and open interest should increase as prices move in the direction of the major price trend.

The two ideal conditions are shown in Figures 1. and 2. Note that total volume and total open interest readings are used; an examination of individual contract month figures contains severe limitations. The application of the general rule is also subject to considerable interpretation. Rarely

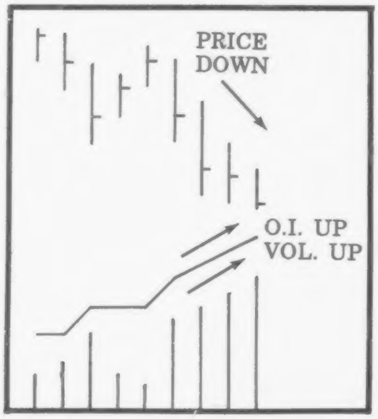
Figure 1. Ideal Healthy Bull Market



Volume: Increases on Price Up Days
Decreases on Price Selloffs

Open Interest: Increases on Price Up Days
Decreases on Price Selloffs

Figure 2. Ideal Healthy Bear Market



Volume: Increases on Price Down Days
Decreases on Price Rallies

Open Interest: Increases on Price Down Days
Decreases on Price Up Days

does any market conform exactly to the "rules."

Seasonal Patterns

The CRB seasonal graphs of open interest and volume are constructed on a percentage scale. The absolute level of open interest is different from year to year, but the percentage changes do exhibit a regular pattern. These trends are very pronounced in the agricultural futures. Note the dramatic increase in open interest of corn and soybeans, as the size of the crop becomes more assured and the fall harvest in the U.S. approaches. This reflects the increased need to place hedges by both the producer and user of the commodity. For corn and soybeans, the study of the 10-year period ending in 1988 yields a high correlation with earlier studies in the mid-1950s.

Application

The change in open interest is the important condition monitored by technical analysts. In its most minute application, the open interest change from one trading session to the next is analyzed in conjunction with the price change that session. But if the analysis is expanded to encompass several weeks, the seasonal influences in the traditional commodity futures must be factored in.

For example, given a price uptrend on a chart, if the open interest is declining, a weak price uptrend is deemed to be in effect. But what if total open interest normally declines at that time of year? A second step in the analysis is necessary. The following question must be answered: Is the current decline in open interest equal to or greater than what would normally be expected? If so, the same conclusions would be reached. But, if current open interest is only falling slightly in the face of an expected severe seasonal open interest decline, a more bullish reading of the current price rally would result. The percentage scale on the historic charts makes the comparison possible. A current 12 percent decrease in open interest from month to month compared to a normally expected 15 percent decrease is actually a net effective increase of 3 percent!

The CRB has made the task of analyzing seasonal factors easier by including a graphic history of open interest for the previous six years on the daily charts. This provides a quick and easy visual comparison showing the effective net change.

Although volume also exhibits seasonal characteristics, variations in volume are more important in day-to-day comparisons than over extended periods. Thus no seasonal adjustment is necessary. Volume on a daily basis is categorized as "high," "average," or "low." The reading is then analyzed in conjunction with the price change to determine the direction of the major price trend. For example, low volume sell-offs are bullish; low volume rallies are bearish.

Financial Instrument Futures

There is one distinct difference between the look of seasonal patterns of the agricultural commodities and the financial instruments. This is the tendency for the contract specifications of the financial futures to overwhelm any seasonal influences. Only the dominant calendar year-end effect of the financials is evident. The individual traits of several specific markets will be examined.

T-Bonds

Open interest is very consistent in registering relative highs in the month prior to the quarterly expirations in March, June, September, and December. This can be attributed to three factors. First, options on T-bond futures expire in the month prior to the futures expiration; futures open interest most often shows a decline when an option series expires. Secondly, T-bonds are a physical delivery futures contract; positions are offset prior to the date actual delivery could occur (on the first day of the expiration month). Also, those months correspond with the Treasury's quarterly refunding cycle, when dealer hedging would be expected to increase.

A definite year-end phenomenon in T-bonds is observable. Open interest tends to decline into year-end as book-squaring occurs. Another situation on the T-bond seasonal chart needs an explanation. A general escalation of open interest from April onward is evident. Some of the open interest increase was probably due to positions being placed solely to achieve a favorable position with respect to the U.S. income tax laws. Tax spreading was prevalent prior to its abolishment in 1982, but it should not be a factor today. Removing this aspect of tax spreading from seasonal studies is specifically addressed in the gold comment.

Eurodollar Time Deposits

A definite increase in open interest from mid-January to mid-December is observable on the seasonal chart. But some care must be taken not to read too much into this apparent yearly trend. Eurodollars began trading on the IMM in Chicago in December 1981. The CRB Eurodollar seasonal chart begins with the first full year of trading (1982) and contains only seven years of observation. Much of what appears to be a yearly trend is due to the phenomenal growth of the contract over time.

Of greater consequence in Eurodollars is the fact that the contract is cash settled. No onerous delivery mechanism (either for the longs or shorts) exists. Thus open positions in both futures and options can be held to the last trading day. Expiration occurs later than the 15th day of each quarter. The CRB seasonal graphs are plotted as of the 15th and the end of each month. Therefore, it is not surprising to see relatively low open interest at the end of the quarterly expiration months.

The most important technical factor concerning any cash-settled futures contract is the tendency for open interest to drop precipitously at the simultaneous expiration of the futures and options.

Gold

A change in the seasonal pattern of gold open interest has occurred since 1982. It is due to the curtailing of tax spreads. Open trade profits and losses are now marked to market (realized) at the end of each calendar year. Seasonal studies prior to 1982 showed a precipitous decline of open interest at the beginning of the calendar year, which extended to mid-year, and was followed by a distinct escalation into year-end. The month of May was the last chance for traders to place positions that had the possibility of "long term" (6+ months on long positions) capital gains (taxed at a lower rate) in the current calendar year. Open interest often increased in May. This was true for any storable commodity with relatively stable carrying-charge relationships.

The current CRB seasonal study of gold begins in 1984 (after tax spreads were ruled illegal) and extends to 1989 to produce an unbiased view. Note that the previously discussed seasonal variation in open interest is not present. A relative low in both trading volume and open interest occurs at the beginning of August (summer doldrums?). But in general, no dramatic seasonal influence is present such that an in-depth secondary level of analysis is needed. The contract month of June tends to be a popular vehicle with speculators. The seasonal study does indicate an escalation of open interest into mid-May, which then declines into first delivery day, June 1.

The remaining relative lows in open interest in COMEX gold futures are due to the expiration of the popular contract months of February, April, June, August, October, and December.

Currencies

Relative lows in open interest are registered in mid-January and then at the end of the quarterly expiration months of March, June, and September. The D-mark seasonal study, in particular, shows that the relative peaks and troughs in open interest are about equal in percentage terms. The month of December is one of the lowest in terms of volume in all of the IMM foreign exchange futures.

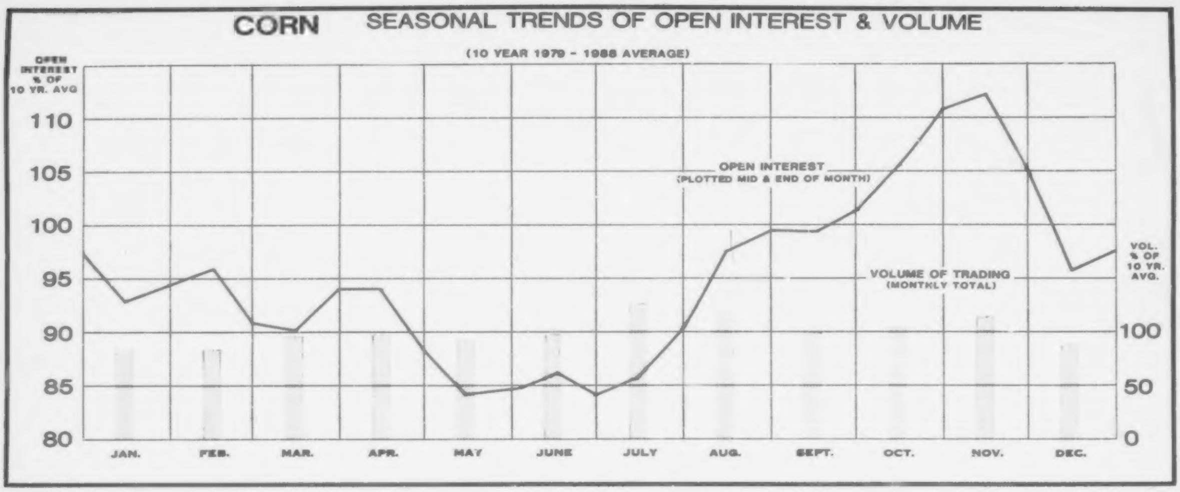
These observations can again be explained in terms of the contract specifications. Of all the futures contracts, the currencies show the greatest amount of deliveries in relation to the total number of contracts outstanding. This is because arbitrage dealing between the cash inter-bank market and futures is unwound using the futures settlement process. The last trading day on the IMM is typically the third Monday of each calendar quarter. Delivery takes place two days later.

Options on currency futures expire early in the quarterly expiration month. After the options expiration, futures open interest declines. Looking at open interest on a single day at the end of the quarter (as the CRB does), one, of course, sees the decline from both the futures and options expirations.

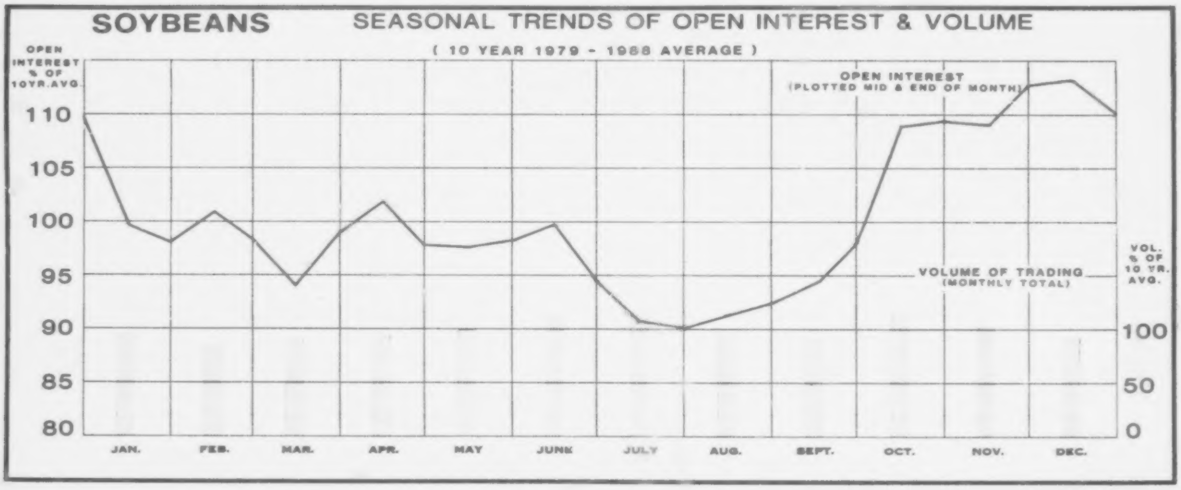
Summary

Seasonal analysis is required for an accurate technical assessment of open interest in the traditional agricultural commodity futures. Many of the distinct variations in open interest in financial futures can be explained in terms of the contract specifications. In this regard, the technical analyst must be aware of any changes or innovations in the contract terms that would produce a discernible volume or open interest pattern. An example is the introduction of serial (monthly) options expirations. If the serial options become popular, a smaller cycle in open interest changes within a calendar quarter may become a new "seasonal" force.

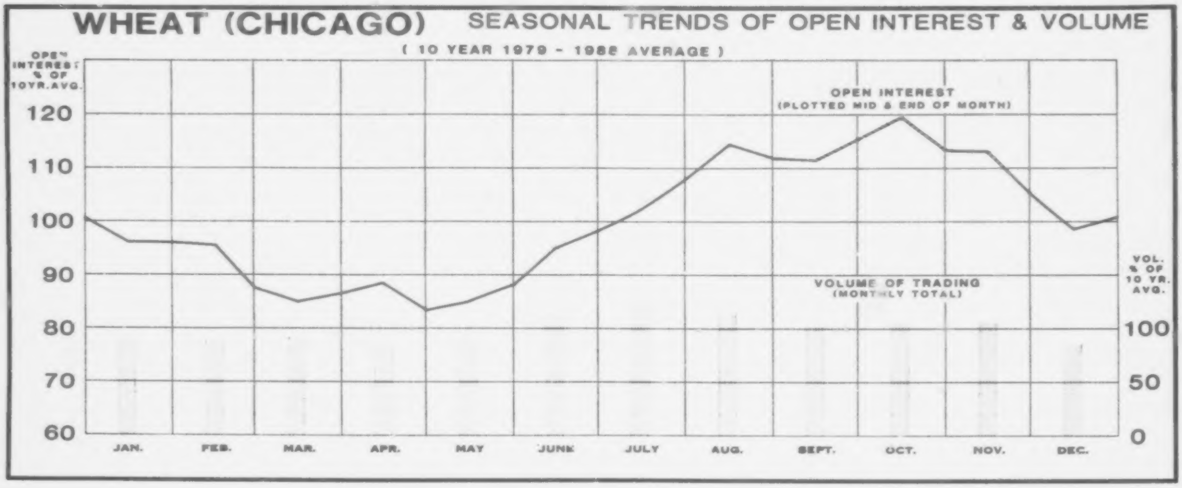
Editor's Note: Additional insights into interpretation of volume and open interest are available in Mr. Shaleen's book, *Volume and Open Interest: Cutting Edge Trading Strategies in the Futures Markets*, Probus Publishing, 1991, Chicago.


CORN SEASONAL TRENDS OF OPEN INTEREST & VOLUME

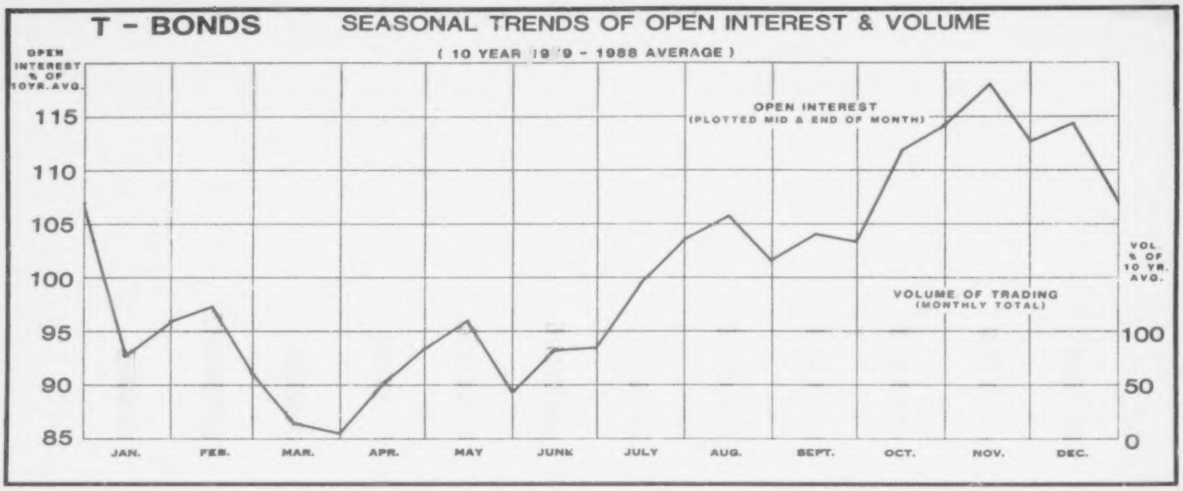
(10 YEAR 1979 - 1988 AVERAGE)


SOYBEANS SEASONAL TRENDS OF OPEN INTEREST & VOLUME

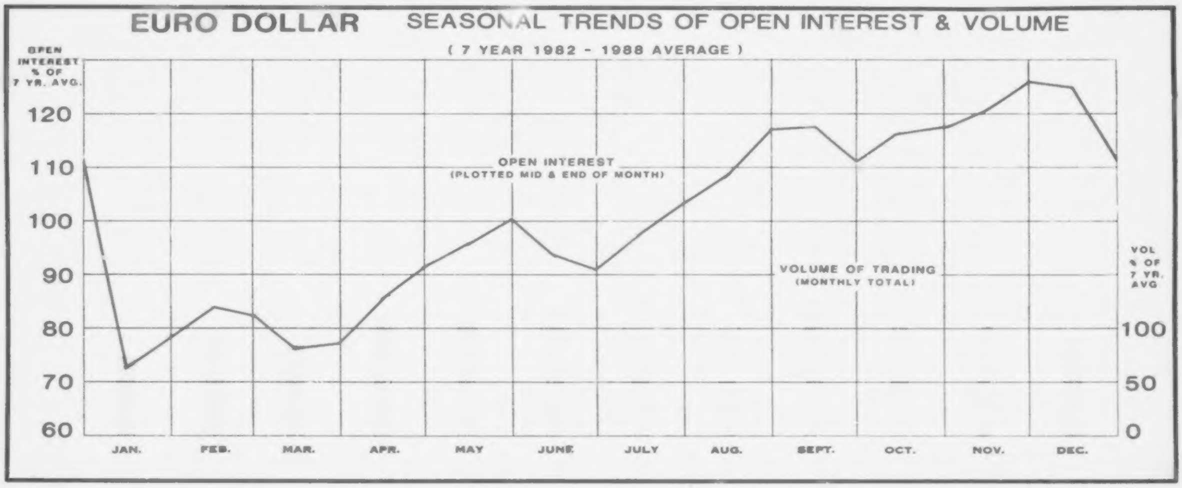
(10 YEAR 1979 - 1988 AVERAGE)


WHEAT (CHICAGO) SEASONAL TRENDS OF OPEN INTEREST & VOLUME

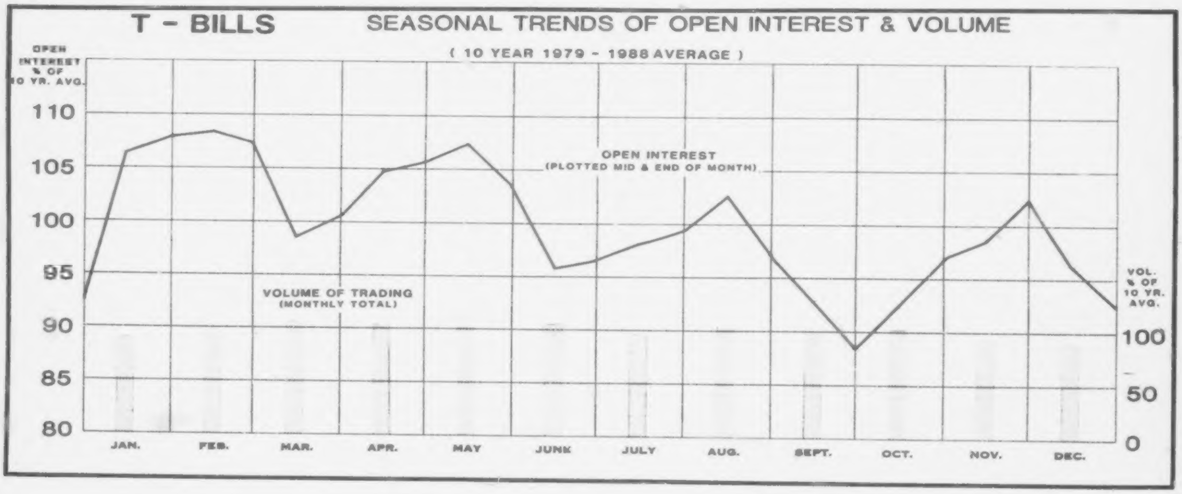
(10 YEAR 1979 - 1988 AVERAGE)


T - BONDS SEASONAL TRENDS OF OPEN INTEREST & VOLUME

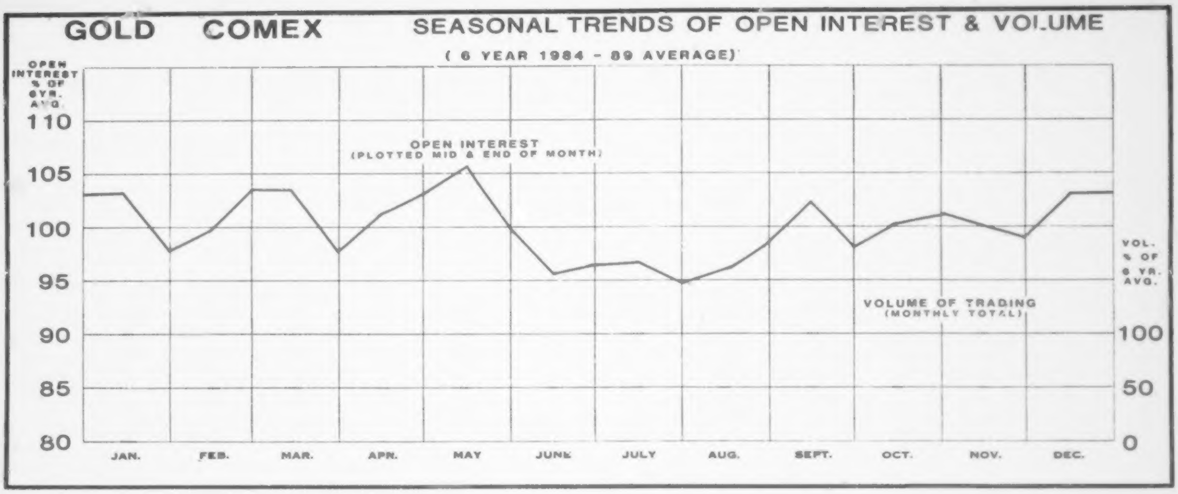
(10 YEAR 1979 - 1988 AVERAGE)

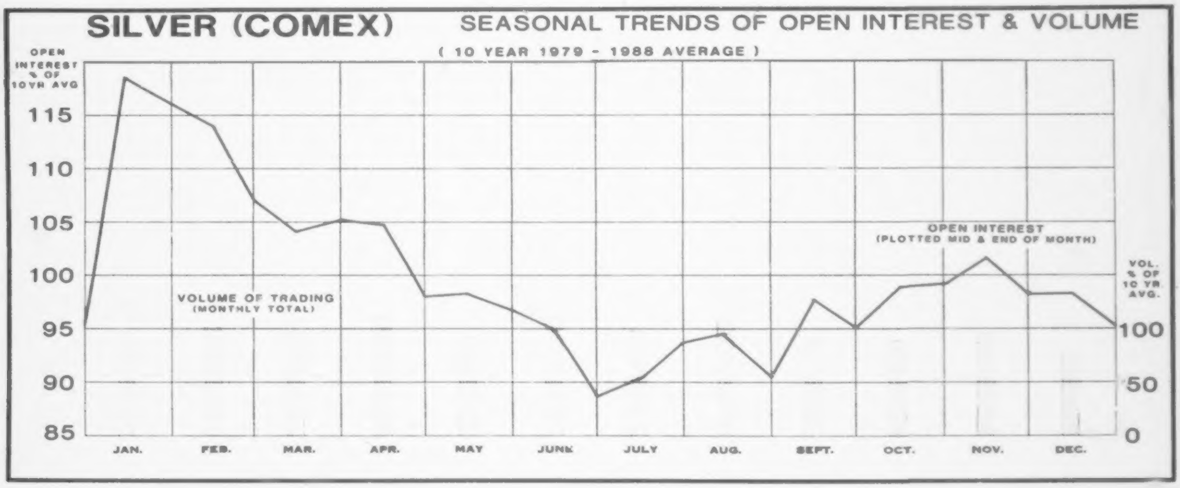

EURO DOLLAR SEASONAL TRENDS OF OPEN INTEREST & VOLUME

(7 YEAR 1982 - 1988 AVERAGE)


T - BILLS SEASONAL TRENDS OF OPEN INTEREST & VOLUME

(10 YEAR 1979 - 1988 AVERAGE)


GOLD COMEX
SEASONAL TRENDS OF OPEN INTEREST & VOLUME
(6 YEAR 1984 - 89 AVERAGE)
OPEN INTEREST % OF 6YR. AVG.
110
105
100
95
90
85
80
OPEN INTEREST
(PLOTTED MID & END OF MONTH)
VOL. % OF 6 YR. AVG.
VOLUME OF TRADING
(MONTHLY TOTAL)
100
50
0
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.


SILVER (COMEX)
SEASONAL TRENDS OF OPEN INTEREST & VOLUME
(10 YEAR 1979 - 1988 AVERAGE)
OPEN INTEREST % OF 10YR AVG
115
110
105
100
95
90
85
VOLUME OF TRADING
(MONTHLY TOTAL)
OPEN INTEREST
(PLOTTED MID & END OF MONTH)
VOL. % OF 10 YR AVG.
100
50
0
JAN.
FEB.
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JUNE
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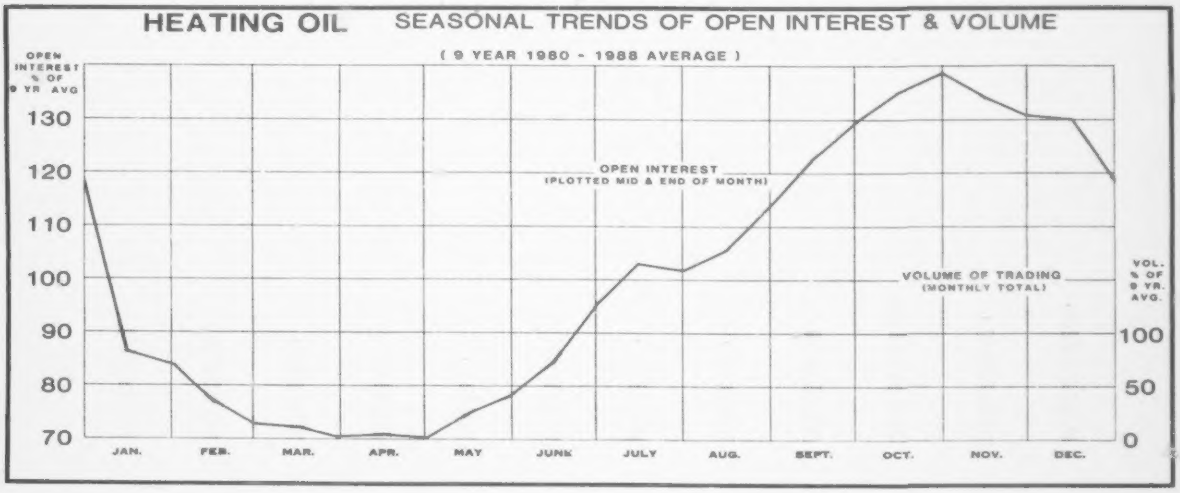
HEATING OIL
SEASONAL TRENDS OF OPEN INTEREST & VOLUME
(9 YEAR 1980 - 1988 AVERAGE)
OPEN INTEREST % OF 9 YR AVG
130
120
110
100
90
80
70
OPEN INTEREST
(PLOTTED MID & END OF MONTH)
VOLUME OF TRADING
(MONTHLY TOTAL)
VOL. % OF 9 YR. AVG.
100
50
0
JAN.
FEB.
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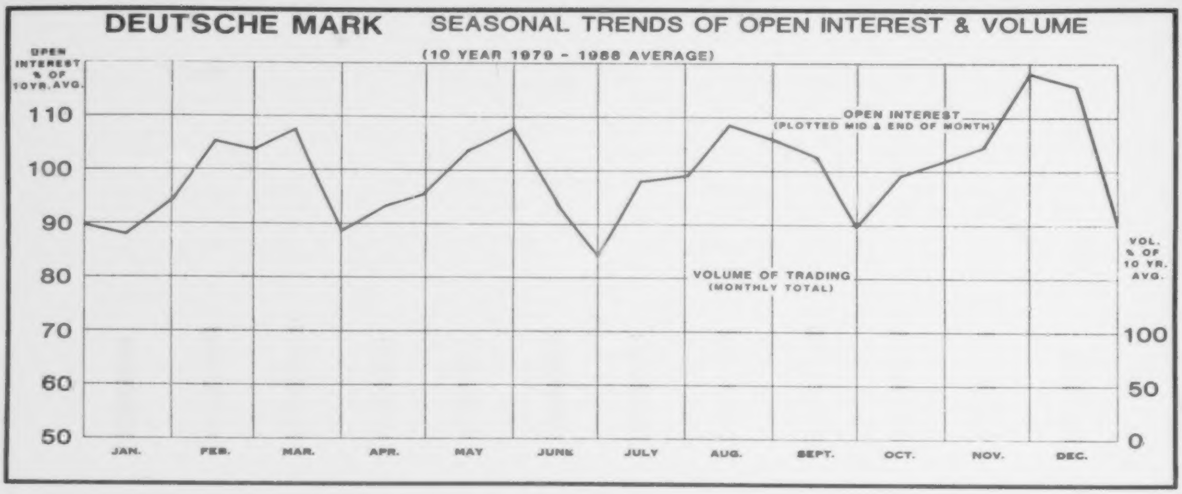
DEUTSCHE MARK
SEASONAL TRENDS OF OPEN INTEREST & VOLUME
(10 YEAR 1979 - 1988 AVERAGE)
OPEN INTEREST % OF 10 YR. AVG.
110
100
90
80
70
60
50
OPEN INTEREST
(PLOTTED MID & END OF MONTH)
VOLUME OF TRADING
(MONTHLY TOTAL)
VOL. % OF 10 YR. AVG.
100
50
0
JAN.
FEB.
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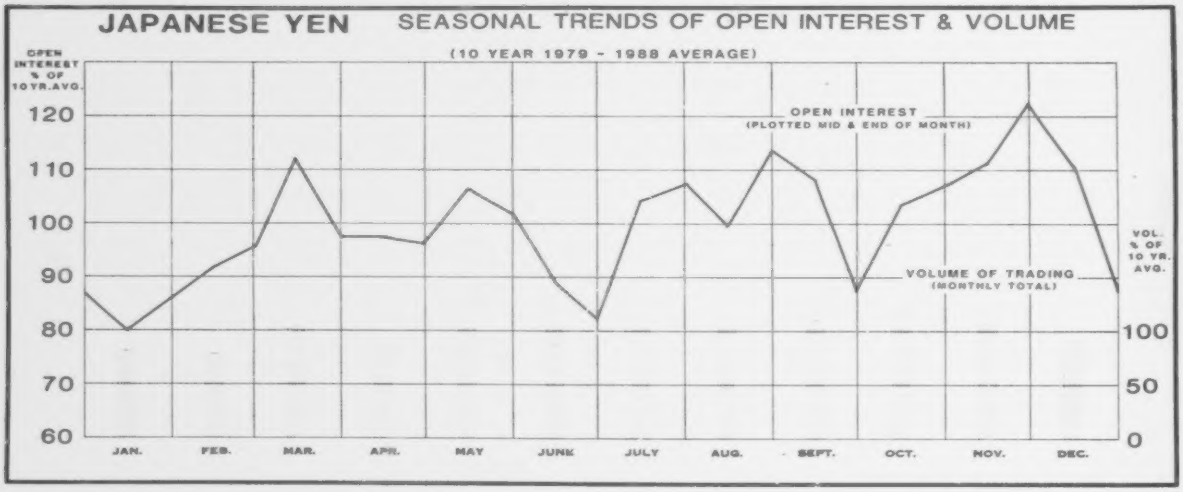
JAPANESE YEN
SEASONAL TRENDS OF OPEN INTEREST & VOLUME
(10 YEAR 1979 - 1988 AVERAGE)
OPEN INTEREST % OF 10 YR. AVG.
120
110
100
90
80
70
60
OPEN INTEREST
(PLOTTED MID & END OF MONTH)
VOLUME OF TRADING
(MONTHLY TOTAL)
VOL. % OF 10 YR. AVG.
100
50
0
JAN.
FEB.
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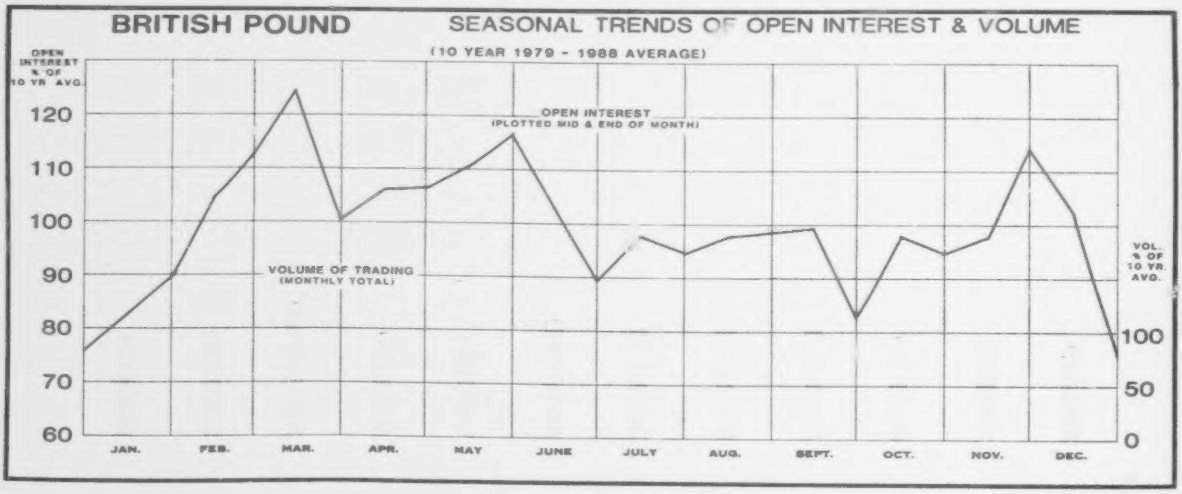
BRITISH POUND
SEASONAL TRENDS OF OPEN INTEREST & VOLUME
(10 YEAR 1979 - 1988 AVERAGE)
OPEN INTEREST % OF 10 YR. AVG.
120
110
100
90
80
70
60
OPEN INTEREST
(PLOTTED MID & END OF MONTH)
VOLUME OF TRADING
(MONTHLY TOTAL)
VOL. % OF 10 YR. AVG.
100
50
0
JAN.
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JUNE
JULY
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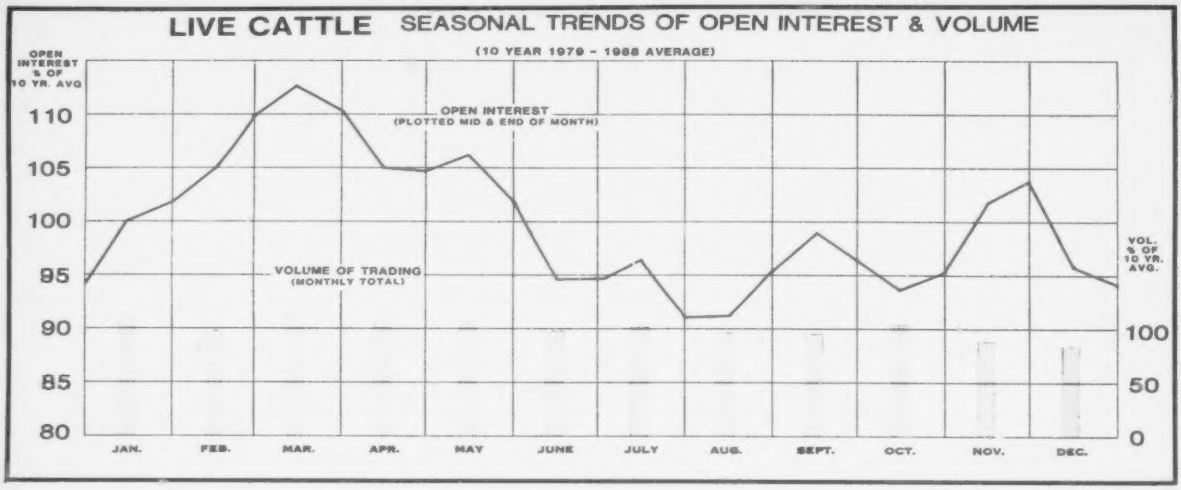
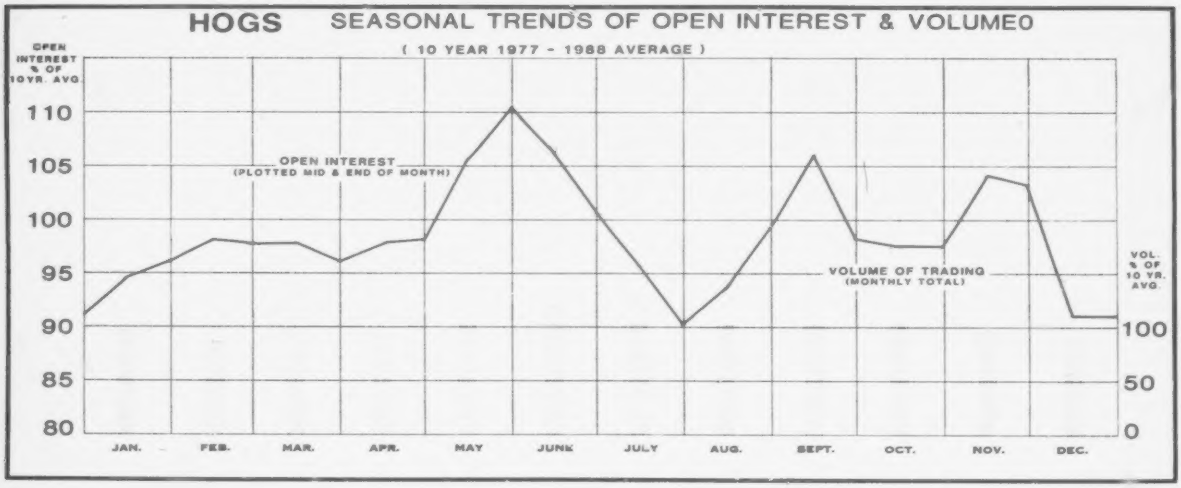
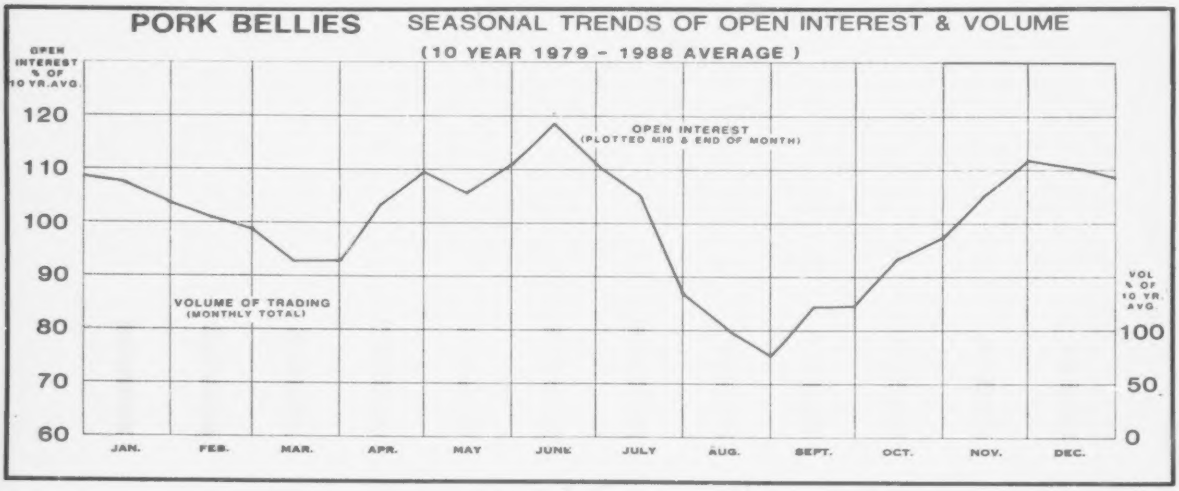

LIVE CATTLE SEASONAL TRENDS OF OPEN INTEREST & VOLUME

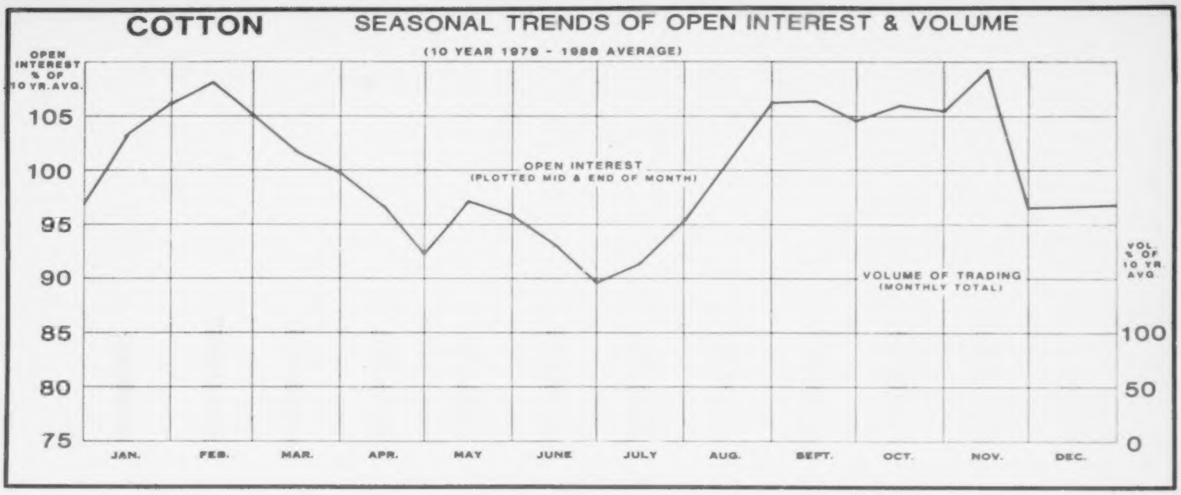
(10 YEAR 1979 - 1988 AVERAGE)


HOGS SEASONAL TRENDS OF OPEN INTEREST & VOLUMEO

(10 YEAR 1977 - 1988 AVERAGE)

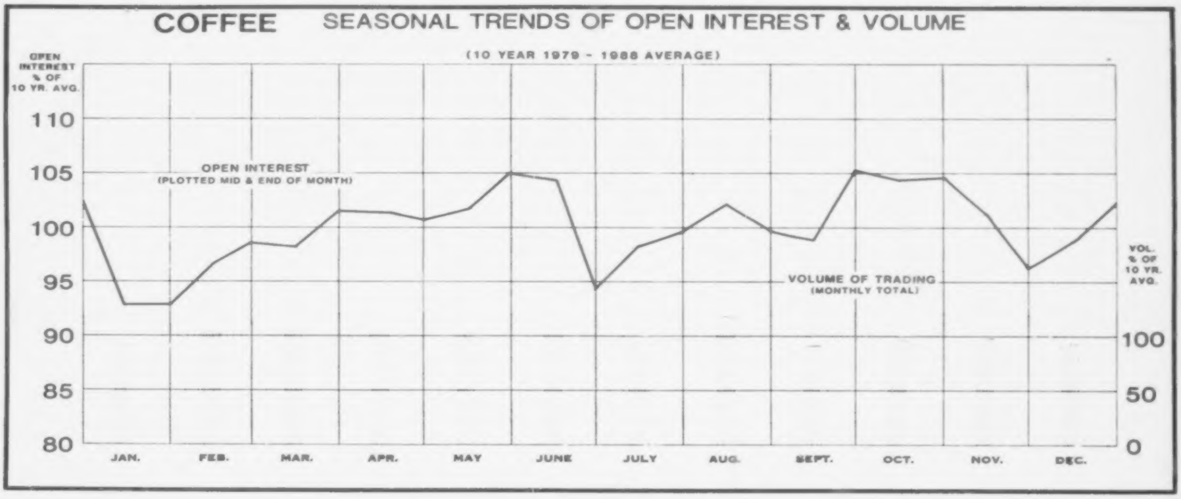

PORK BELLIES SEASONAL TRENDS OF OPEN INTEREST & VOLUME

(10 YEAR 1979 - 1988 AVERAGE)



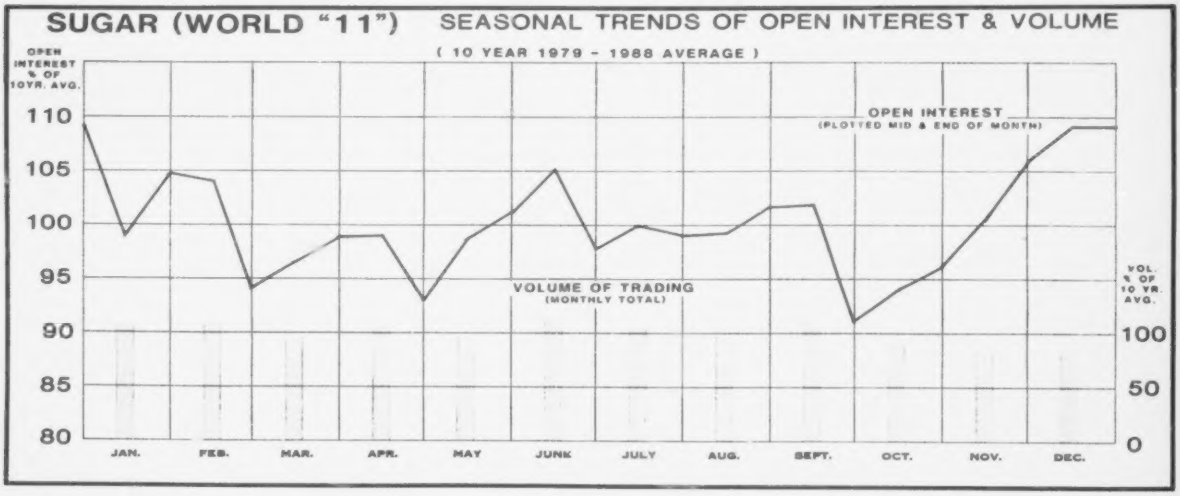
COTTON SEASONAL TRENDS OF OPEN INTEREST & VOLUME

(10 YEAR 1979 - 1988 AVERAGE)



COFFEE SEASONAL TRENDS OF OPEN INTEREST & VOLUME

(10 YEAR 1979 - 1988 AVERAGE)



SUGAR (WORLD "11") SEASONAL TRENDS OF OPEN INTEREST & VOLUME

(10 YEAR 1979 - 1988 AVERAGE)

AN INTRODUCTION TO GERMAN INTEREST-RATE FUTURES

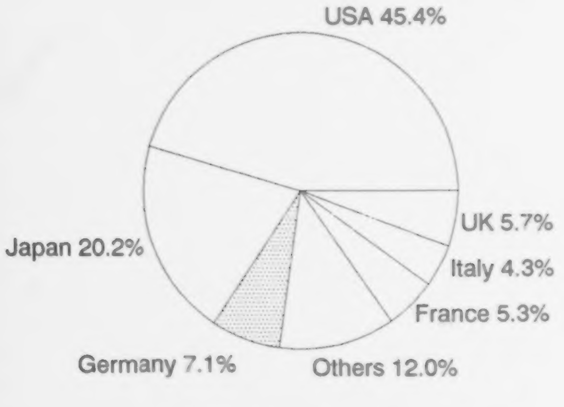
BY RALF HERKLOTZ

Long before the Berlin Wall was breached on November 9, 1989, the Federal Republic of Germany's Deutschemark had become one of the most prominent international currencies. Thanks to the Bundesbank's independence from political influences, as well as western Germany's strong economic growth, the D-mark was perceived as a dependable store of value, making issues that pay interest in D-marks attractive investments.

Under the terms of history's largest friendly leveraged buy-out, the five states that had comprised East Germany were merged into West Germany under the latter's formal name, the Federal Republic of Germany. The East German mark, the Ostmark, was exchanged one-for-one for D-marks on July 1, 1990, and political unification was completed on October 3, 1990.

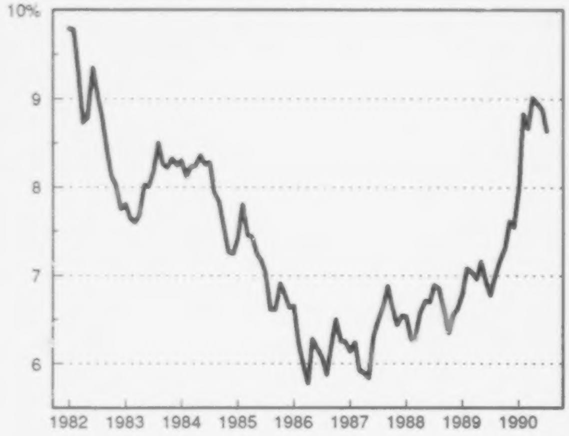
Consolidated economic statistics for Germany were not available as of this writing, and an historical data series for the reunited nation may never be available, due to the quality of East Germany's statistics. However, it is estimated that the united Germany's gross national product increased by an impressive 4.5 percent in 1990, despite the worse-than-expected condition of the industrial sector in what had been East Germany. Although recessions were under way in several of its largest trading partners, including the U.S. and the U.K., Germany's economy was expected to grow by 3 percent in 1991.

Chart 1. Outstanding Internationally Traded Government Bonds, September 30, 1990



Source: Merrill Lynch

Chart 2. Month-end Yield to Maturity for 10-year Bunds



Prior to reunification, the Federal Republic's government bond market was already the world's third largest, trailing only the U.S. and Japanese markets. Similarly, the Eurodeutschemark money market was the largest European-currency money market and the third largest internationally. The importance of these markets and of the D-mark itself is sure to increase in the years ahead, as the reconstruction of eastern Germany picks up momentum. Germany's public sector deficit was expected to widen from 110-115 billion D-marks in 1990 to 140-160 billion in 1991, largely because of the merger.

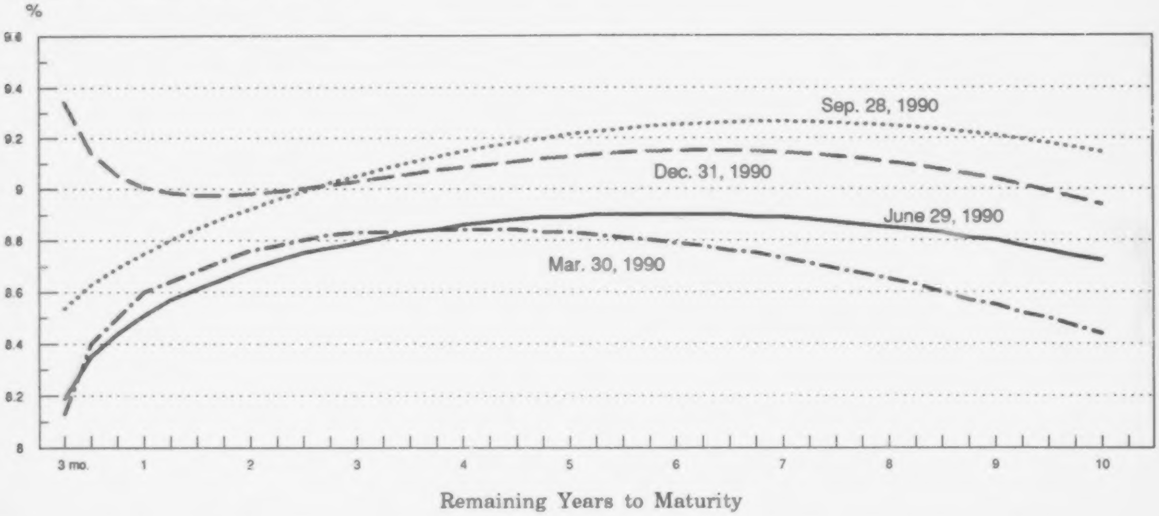
Nevertheless, the Bundesbank is unlikely to let anything interfere with its constitutional mandate to fight inflation, as shown by its decision to raise its interest rates by 50 basis points on January 31, 1991. The discount rate went to 6.5 percent, and the Lombard rate (for overnight funds) went to 9 percent.

The Bund Cash Market

The largest, most actively traded issues in the D-mark bond market are the Federal Republic's Bunds (short for "Bundesanleihen"). Bunds are issued in the name of the German Government, usually with a term to maturity of 10 years. Like U.S. Treasuries, they have no default risk and pay a fixed coupon. However, unlike Treasuries, Bunds only pay interest annually.

Bunds are issued from six to eight times a year. Prior to unification, the typical issue size had been 4 billion D-marks. Afterwards, issue sizes increased

Chart 3. Bund Yield Curves



to 6 billion or 8 billion D-marks. Originally, new issues were entirely underwritten by an issuing syndicate, called the consortium. The Bundesbank serves as lead manager of the consortium, which contained 73 German financial institutions and 22 foreign-owned banks in 1991. But in 1990, a new procedure was introduced, under which part of the new issue is underwritten by the consortium and the remainder is then opened for tender. The Bundesbank also retains approximately 20 percent of any new issue for market-making purposes in the German bond market, ensuring a continuous and liquid market in Bunds.

The federal government also issues Bunds specifically earmarked to finance unification through the German Unity Fund (Fond Deutsche Einheit). In February 1991, the German Finance Ministry accepted bids on 7 billion marks of Unity Bunds. The consortium took 2 billion marks, priced at 100.70 to yield 8.39 percent on February 7; next, 2.162 billion marks were sold at auction the following day at a yield of 8.44 percent, and the Bundesbank took an additional 2.838 billion of the 8.5 percent coupon issue for market operations.

Table 1. Deliverable Bunds as of December 5, 1990

Contract Month: **March 1991** *Last Trading Day:* **March 5, 1991**
Delivery Day: **March 11, 1991**

Bund	Coupon	Maturity	Price Factor	Accrued Interest	Issue Amount (Billion DM)
113473	7.000	Sep 20, 1999	1.064591	8,312.50	4
113474	7.000	Oct 20, 1999	1.065098	6,854.17	4
113475	7.125	Dec 20, 1999	1.074503	4,007.81	4
113476	7.250	Jan 20, 2000	1.083526	2,567.71	5
113477	7.750	Feb 21, 2000	1.118018	1,076.39	4
113479	8.750	May 22, 2000	1.189312	17,560.76	6
113000	8.750	Jul 20, 2000	1.191697	14,036.46	6
113480	8.500	Aug 21, 2000	1.175355	11,805.56	8
113481	9.000	Oct 20, 2000	1.213305	8,812.50	17
113482	8.875	Dec 20, 2000	1.207194	4,992.19	8
					Total: 66

Invoicing Amount: (2500 X Bund settlement price X price factor) + accrued interest
Price Factor: price factor expressed as a fraction of par
Accrued Interest: accrued interest on DM250,000 face value as of the delivery day

Also, there are very liquid and actively traded five-year issues, called "Bundesobligationen," or Bobls for short. In addition, several government agencies--in particular the Post Office (Bundespost) and the state railway system (Bundesbahn)--issue 10-year fixed-rate bonds. They trade at a higher yield than Bunds and tend to be less liquid. Trading portfolios and foreign investors tend to concentrate on the more liquid Bunds.

Daily trading volume in the secondary market for Bunds averages 10 billion D-marks. Some of the trading is done on the stock exchanges in the Federal Republic, but the majority of the business is on the interbank over-the-counter market. There is also a growing Bund repo market, as well as an active over-the-counter market in options on individual Bund issues.

According to the Bundesbank, approximately 50 to 60 percent of the Bunds outstanding in 1990 were held by foreigners. Like their German counterparts, they faced increasing price risk and volatility in their holdings in 1990. Chart 2. shows the monthly ending yield to maturity for 10-year Bunds from 1982 through 1990.

Fortunately, the growing need for an efficient hedging and trading mechanism is being met by the Bund futures and options contracts on the London International Financial Futures Exchange (LIFFE).

The LIFFE Bund Contract

Since it opened in 1982, LIFFE has grown to be the largest futures and options exchange in Europe, thanks to its international membership. LIFFE members include most of the leading U.S., European and Japanese financial institutions, and they actively support the widest range of derivatives on internationally traded interest-rate products available on any exchange.

The German Bund contract, introduced in September 1988, is currently the most actively traded contract on LIFFE. Options on the Bund contract, together with the three-month Eurodeutschemark (Euromark for short) futures contract, were introduced in April 1989. Options on Euromark futures were introduced in March 1990. The German interest-rate contracts are complemented by futures on British, U.S., and Japanese government debt; ECU bonds; and money market instruments in Short Sterling, Eurodollars, ECUs and Swiss francs. Options also are listed on most of those futures contracts.

Like other successful long-term interest-rate futures, the Bund contract calls for physical delivery. Any Bund with a remaining maturity of between 8.5 and 10 years is deliverable against the contract, including Bunds issued before unification and the Unity Bunds. This narrow delivery window makes the bund contract an excellent hedging instrument for the long end of the Bund market. At the same time, the deliverable supply of Bunds is large enough to ensure liquidity. Bund futures usually trade on a bid/asked spread of 0.01 to 0.02 pfennig. Daily volume in 1990 averaged 37,872 contracts, representing a nominal value of 9.4 billion D-marks.

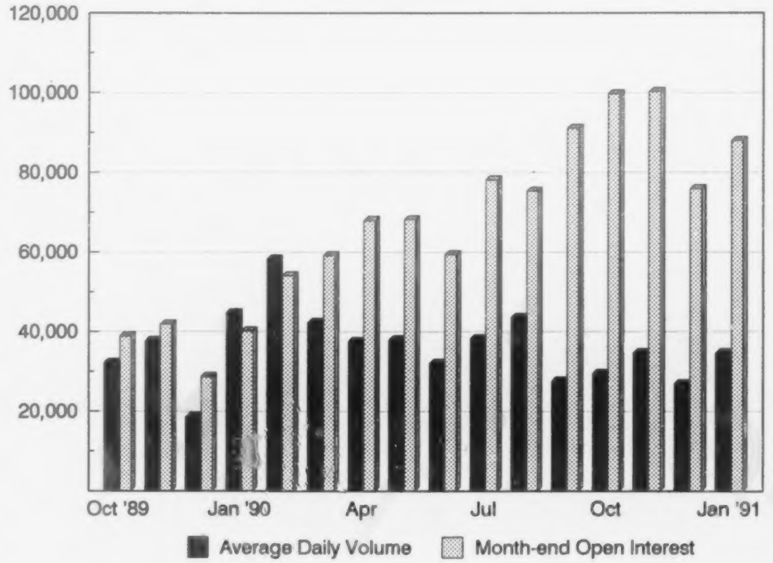
Table 1. lists the Bunds initially deliverable against the March 1991 contract, their respective issue size, their price factor and accrued interest as of December 5, 1990. Unlike futures on U.S. T-bonds, whether traded on LIFFE or the Chicago Board of Trade, there is only one delivery day for Bund futures. Delivery can be made either through Germany's domestic bond settlement system, the Kassenverein, or through the Eurobond settlement agencies Euroclear or Cedel.

All trades on LIFFE are cleared through the London Clearing House, a division of the International Commodities Clearing House Ltd. (ICCH). Unlike the U.S. system, where the exchanges own their clearing houses, ICCH is owned by six of London's largest banks: Barclays Bank, Lloyds Bank, Midland Bank, National Westminster Bank, the Royal Bank of Scotland, and Standard Chartered Bank. However, except for the fact that the banks, rather than the exchange's clearing members, are the owners, the London Clearing House functions almost exactly like its U.S. counterparts.

Once a trade has been matched and registered in the name of a clearing member, the Clearing House becomes the seller to every buyer and the buyer to every seller on a principal-to-principal basis. Thus, as the counterparty to every clearing member, the Clearing House is legally responsible for the financial performance of both parties to every contract, minimizing counterparty risk.

Regardless of the currency in which the futures contract or option is traded, the Clearing House accepts initial and maintenance margins in D-marks, yen, dollars, British sterling, ECUs or Swiss francs. It also accepts collateral in cash, T-bills, U.K. bank guarantees and certain German bonds from its

Chart 4. LIFFE Bund Futures Statistics



clearing members. If a customer trading Bunds prefers dollars for payment, the Clearing House would accept margin and pay out margin only in dollars, converted at the prevailing exchange rate at the time of the transaction.

The Bund option is an American-style option on the futures contract. Like options on T-bond futures, Bund options expire in the month before the delivery month of the underlying futures contract. For example, March 1991 Bund options expired on February 21, 1991.

Euromark Futures

Like London's Eurodollar market, the Euromark cash deposit market is a highly sophisticated, mature one. Deposits usually trade on a spread of 1/8%, which often narrows to 1/16% when market volume increases. There is an active forward-rate agreement (FRA) market, as well as a D-mark-denominated interest-rate swap market. As a result, three-month Euromark futures and options are the second-largest deposit contracts on LIFFE. A daily average of 10,512 futures contracts, representing a nominal value of 10.5 billion D-marks, and 980 options, valued at 980 million D-marks, were traded in 1990.

Euromark futures and options are structured on the same lines as LIFFE's Eurodollar contracts. Options on both contracts expire on the same day as their underlying futures contract, and both contracts are cash settled. Cash settlement avoids the problem of the creditworthiness of an individual CD issuer. Beginning with the June 1992 contract, Euromark futures will be settled against the British Bankers Association interest rate settlement, which is widely accepted for forward-rate agreements. Prices for futures contracts are quoted using the IMM Index system (100-interest rate).

Hedging with LIFFE Bund Futures

In order to properly hedge a specific Bund issue, or a portfolio of Bunds, a hedge ratio must be determined. While there are various ways to calculate hedge ratios, the basis-point-value method (BPV) is the most commonly used approach. It measures the absolute change in the price of a particular bond for a change of 1 basis point (0.01%) in its yield. The relative volatility between the Bund and the futures contract is established by dividing the BPV of the Bund to be hedged by the BPV of the cheapest-to-deliver Bund. The number of contracts needed to hedge a cash position is determined with the following formula:

$$\frac{\text{Nominal Value of Bund (or portfolio)}}{\text{Nominal Value of Bund Futures Contract}} \times \frac{\text{BPV Bund (or portfolio)}}{\text{BPV CTD Bund}} \times \text{Price Factor CTD Bund} = N$$

For example, suppose a trader on February 13, 1991, held 50 million D-marks of the non-CTD 7.75% Bund of February 21, 2000, and that the cheapest-to-deliver Bund that day was the 8.875% of December 20, 2000.

	non-CTD Bund	CTD Bund
maturity	Feb. 21, 2000	Dec. 20, 2000
coupon	7.750%	8.875%
price	95.50	102.85
yield	8.4831%	8.4305%
price factor	1.1188018	1.207194

The BPV is determined in three steps:

Step 1: Calculate the yield to maturity of the Bund or the Bund portfolio from its current price. (Remember that Bunds only pay interest annually, so programs designed for T-bonds, which pay semiannual coupons, will have to be modified to reflect this significant difference.)

Step 2: Calculate the value of the bond portfolio if interest rates rise one basis point.

Step 3: Determine the difference between the value of the Bund portfolio and the value determined in Step 2. This difference is the BPV.

The price of the non-CTD Bund to be hedged would be 95.4405 after a one-basis-point rise in yield. Consequently, its BPV is:

95.50-95.4405 = 0.0595.

The price of the CTD Bund after a one-basis-point rise in yield would be 102.7835. Its BPV would be: 102.85-102.7835 = 0.0665.

In order to hedge the Bund position, the trader would sell 216 March Bund futures contracts:

$$N = \frac{50{,}000{,}000}{250{,}000} \times \frac{0.0595}{0.0665} \times 1.207194 = 216.02$$

The D-mark Yield Curve Spread

As Chart 3. shows, the D-mark yield curve has been highly volatile in recent years, offering numerous opportunities to take advantage of changes in its shape by spreading Euromark futures against Bund contracts. To trade the yield curve, a ratio of Euromark futures to Bund contracts must be used to reflect the differences in their durations and yield sensitivities.

Duration is the weighted average time to full recovery of principal and interest payments on a fixed-income security, expressed in years. It is considered the best measure of bond price volatility. A simplified formula for duration, where annual compounding is assumed, is:

$$D = \frac{\displaystyle\sum_{t=1}^{n} \frac{C_t(t)}{(1+i)^t}}{\displaystyle\sum_{t=1}^{n} \frac{C_t}{(1+i)^t}}$$

where t is the time period when coupon or principal payment occurs, C_t is the coupon or principal payment in period t, i is the market yield to maturity of the bond, and the Greek letter Sigma is the summation sign, which means the calculation is repeated each time a payment is made (N times) and then the results are totaled. Or in effect:

$$\text{Duration} = \frac{\text{Present value of cash flows weighted to length of time to receipt}}{\text{Present value of the unweighted cash flow}}$$

where the denominator is, in effect, the current price of the bond. For a zero-coupon security, such as a T-bill or Euromark CD, duration equals time to maturity. For a coupon-paying bond, duration will be less than term to maturity. Generally, the higher the coupon, the shorter the duration. Also, because of the annual coupon on a Bund, it would have a slightly longer duration than a T-note with the same coupon and time to maturity, since part of the T-note's cash flow is received semi-annually.*

$$\frac{\text{Bund Duration}}{\text{Euromark Duration}} \times \frac{\text{Nominal Value Bund Contract}}{\text{Nominal Value Euromark Contract}} = \text{Spread Ratio}$$

The following example assumes a duration of 6 years for the Bund and 0.25 year for the Euromark CD. Suppose, as was the case in December 1989, the yield curve is inverted. A trader expecting the curve to flatten, or revert to a positive slope as it did in 1990, would sell one Bund futures contract and buy six Euromark contracts for the same delivery month in order to profit from the change in the yield curve.

$$\frac{6}{0.25} \times \frac{\text{DM } 250{,}000}{\text{DM } 1{,}000{,}000} = 6$$

Suppose the Euromark futures price was 90.85 (implying a forward rate of 9.15%) and the Bund futures price was 85.14 (implying a forward yield of 8.44%). If the Euromark contract rises to 91.85 (implying a forward rate of 8.15%) and the Bund contract rises to 88.14 (implying a forward yield of 7.90%), the profit on the spread would be 7,500 D-marks: [(91.85-90.85) x 6 + (85.14-88.14)] x DM 2500.

In conclusion, it should be noted that dollar-based traders of LIFFE D-mark instruments must consider their foreign currency exposure. In 1990, dollar-based longs generally saw their losses cushioned by the mark's appreciation, while shorts received bonus profits. In early 1991, the D-mark rallied sharply until early February, only to collapse on rising concerns about the cost of reunification. If unanticipated, such moves may ruin otherwise profitable strategies. However, the potential to use LIFFE D-mark products to take advantage of currency fluctuations should not be underestimated.

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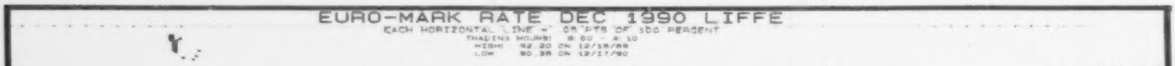
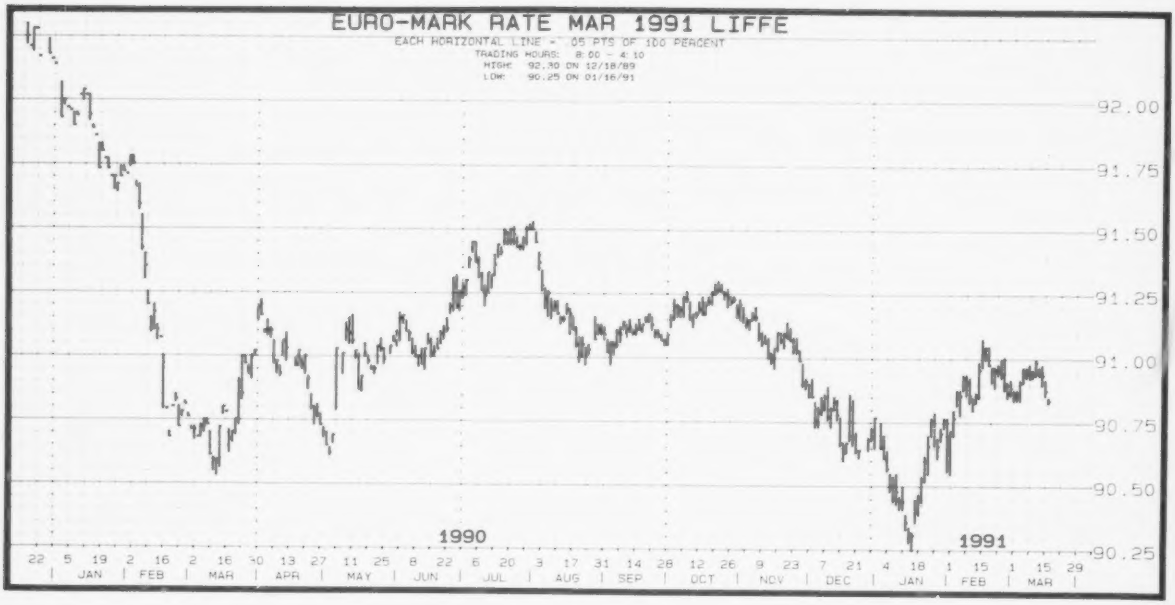
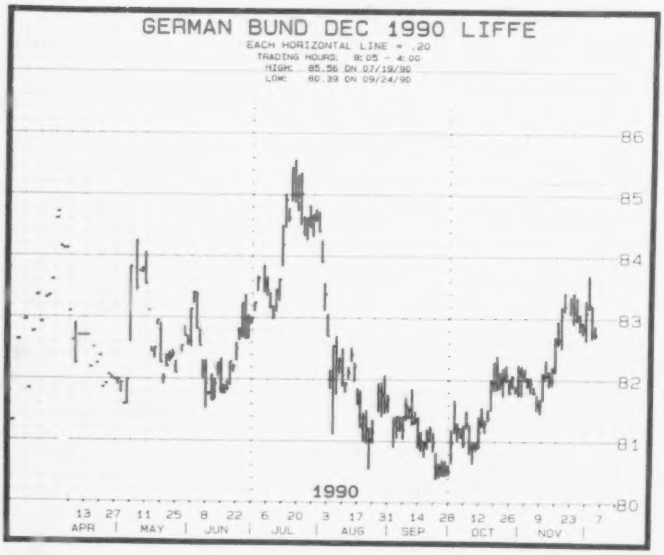
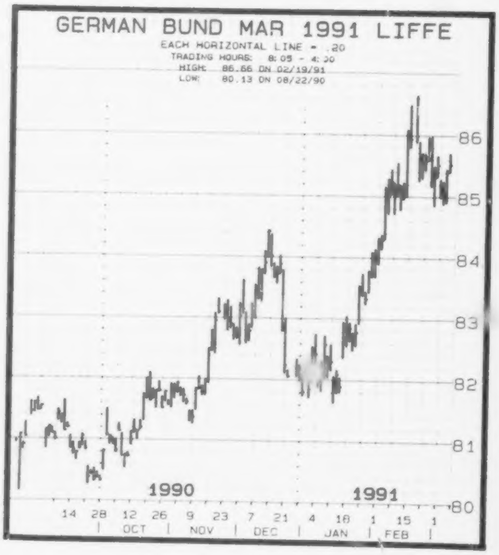
* For more information on duration, including an example of how to calculate it by hand, see John L. Maginn and Donald L. Tuttle, *Managing Investment Portfolios: A Dynamic Process* (second edition), Chapter 6, "Individual Asset Expectations."




EURO-MARK RATE MAR 1991 LIFFE
EACH HORIZONTAL LINE = .05 PTS OF 100 PERCENT
TRADING HOURS: 8:00 - 4:10
HIGH: 92.30 ON 12/18/89
LOW: 90.25 ON 01/16/91
92.00
91.75
91.50
91.25
91.00
90.75
90.50
90.25
1990
1991
22 5 19 2 16 2 16 30 13 27 11 25 8 22 6 20 3 17 31 14 28 12 26 9 23 7 21 4 18 1 15 1 15 29
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR


GERMAN BUND DEC 1990 LIFFE
EACH HORIZONTAL LINE = .20
TRADING HOURS: 8:05 - 4:00
HIGH: 85.56 ON 07/19/90
LOW: 80.39 ON 09/24/90
86
85
84
83
82
81
80
1990
13 27 11 25 8 22 6 20 3 17 31 14 28 12 26 9 23 7
APR MAY JUN JUL AUG SEP OCT NOV


GERMAN BUND MAR 1991 LIFFE
EACH HORIZONTAL LINE = .20
TRADING HOURS: 8:05 - 4:30
HIGH: 86.66 ON 02/19/91
LOW: 80.13 ON 08/22/90
86
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1990
1991
14 28 12 26 9 23 7 21 4 18 1 15 1
OCT NOV DEC JAN FEB

LIFFE Contract Specifications

Three-Month Euromark Interest-Rate Futures

Unit of Trading	DM 1,000,000
Delivery Months	March, June, September, December
Delivery Day	First business day after the last trading day
Last Trading Day/ Expiration	11:00 A.M. two business days prior to third Wednesday of delivery month
Quotation	100.00 minus rate of interest
Minimum Change	0.01
(Tick size & value)	(DM 25)
Initial Margin	DM 500
Straddle Margin	(DM 200) (as of March 8, 1991, subject to change)
Trading Hours	8:00 A.M. - 4:10 P.M.
APT Trading Hours	4:29 P.M. - 5:59 P.M., London time

Futures Contract Standard
Cash settlement based on the Exchange Delivery Settlement Price
Exchange Delivery Settlement Price
Based on the interest rates for three-month Eurodeutschemark deposits offered to prime banking names between 9:30 and 11:00 A.M. on the last trading day, stated by a random sample of 16 from a list of designated banks. Having disregarded the three highest and three lowest quotes, the settlement price will be 100.00 minus the average of the remaining 10 rates. From June 1992 onwards, the EDSP will be based on 11:00 A.M. cash market interest rates, with provision for use of the relevant British Bankers' Association Interest Settlement Rate.

Options on Euromark Futures

Unit of Trading	1 Three-Month Eurodeutschemark futures contract
Delivery Months	March, June, September, December
Exercise Day/	Exercise by 5:00 P.M. on any business day. Delivery on the first business day after the exercise day. Expires at 5:00 P.M. on last trading day. In-the-money options are automatically exercised on last trading day.
Last Trading Day/ Expiration	11:00 A.M., Last trading day of Three-Month Eurodeutschemark futures contract.
Quotation	Multiples of 0.01 (i.e. 0.01%)
Minimum Change	0.01
(Tick size & value)	(DM 25)
Initial Margin	See footnotes
Trading Hours	8:02 A.M. - 4:10 P.M.

Contract Standard
Assignment of 1 Three-Month Eurodeutschemark futures contract for the delivery month at the exercise price.
Exercise Price Intervals
0.25 (i.e. 0.25%), eg. 91.00, 91.25, 91.50, etc.
Introduction of New Exercise Prices
9 exercise prices will be listed for new series. Additional prices will be introduced on the business day after the Three-Month Euromark futures contract settlement price is within 0.12 of the fourth-highest or lowest existing exercise price.
Initial Margin
Initial margin charged by the clearing house for long and short options positions is calculated using daily published risk factors and the level of initial margin for the related futures contract, which it cannot exceed. Initial margin is reduced for all options and options-futures combinations which include offsetting positions.

German Government Bund Futures

Unit of Trading	DM 250,000 nominal value notional German Government bond with 6% coupon
Delivery Months	March, June, September, December
Delivery Day	Tenth calendar day of delivery month. If that is not a working day in Frankfurt, then the Delivery Day† shall be the next working day.
Last Trading Day/ Expiration	11:00 A.M., Frankfurt time Three Frankfurt working days prior to Delivery Day†
Quotation	Per DM 100 nominal value
Minimum Change	DM 0.01
(Tick size & value)	(DM 25)
Initial Margin	DM 3,750
(Straddle Margin)	(DM 250) (as of March 8, 1991.)
Trading Hours	7:30 A.M. - 4 P.M., London time
APT Trading Hours	4:25 - 5:55 P.M., London time

Futures Contract Standard
Delivery may be made of any Bund, including Unity Bunds, with 8 1/2-10 years remaining maturity as of the tenth calendar day of delivery month on a free-of-reallowance basis, as listed by LIFFE.
Exchange Delivery Settlement Price
The LIFFE market price at 11:00 A.M. Frankfurt time on the last trading day. The invoicing amount for the deliverable Bund is calculated by the price factor system. LIFFE will announce a final list of deliverable Bunds and their price factors two weeks prior to the last trading day. Adjustment will be made for interest accruing as of the delivery day, with no deduction for withholding tax.
†Delivery day for Bund futures is the day on which Sellers' Bunds and Buyers' funds arrive at the clearing house's delivery bank. Sellers' accounts will be credited on the same day. Buyers' accounts will be credited with Bunds two Frankfurt working days later.

Options on Bund Futures

Unit of Trading	1 Bund futures contract
Delivery Months	March, June, September, December
Exercise Day	Exercise by 5:00 P.M. any business day, extended to 6:30 P.M. on last trading day. Delivery on the first business day after exercise. Expires at 6:30 P.M. on the last trading day.
Last Trading Day/ Expiration	4:00 P.M., Six business days prior to first day of delivery month.
Quotation	Multiples of DM 0.01
Minimum Change	DM 0.01
(Tick size & value)	(DM 25)
Initial Margin	See footnotes
Trading Hours	7:32 A.M. - 4 P.M. London time

Options Contract Standard
Assignment of 1 Bund futures contract for the delivery month at the exercise price.
Exercise Price Intervals
DM 0.50, e.g. 94.00, 94.50, etc.
Introduction of New Exercise Prices
9 exercise prices are listed for new series. Additional prices are listed on the business day after the Bund futures contract settlement price is within DM 0.25 of the fourth-highest or lowest existing price.
Margin
Initial margin is calculated by the clearing house for long and short positions with reference to daily published risk factors and the initial margin for the related futures contract, which it cannot exceed. Initial margin is reduced for all options and options-futures combinations which include offsetting positions. Positions are marked to market daily.

FUTURES VOLUME HIGHLIGHTS 1990

Rank	Contracts With Volume Over 100,000	1990 CONTRACTS	%	1989 Contracts	%	RANK
1.	T-Bonds, CBOT	75,499,257	27.30%	70,303,195	2[illegible].29%	(1)
2.	Eurodollar, CME	34,695,625	12.55%	40,818,269	15.27%	(2)
3.	Crude Oil, NYMEX	23,686,897	8.57%	20,534,865	7.68%	(3)
4.	S&P 500 Index, CME	12,139,209	4.39%	10,560,455	3.95%	(4)
5.	Corn, CBOT	11,423,027	4.13%	9,270,784	3.47%	(7)
6.	Soybeans, CBOT	10,301,905	3.73%	9,634,802	3.60%	(6)
7.	Gold (100 oz.), COMEX	9,730,041	3.52%	9,988,577	3.74%	(5)
8.	Deutschemark, CME	9,169,230	3.32%	8,186,221	3.06%	(8)
9.	Japanese Yen, CME	7,437,235	2.69%	7,823,739	2.93%	(9)
10.	Swiss Franc, CME	6,524,893	2.36%	6,093,885	2.28%	(12)
11.	No. 2 Heating Oil, NY, NYMEX	6,376,871	2.31%	5,740,967	2.15%	(13)
12.	T-Notes (6 1/2-10 Year), CBOT	6,054,222	2.19%	6,109,518	2.28%	(11)
13.	Sugar #11, CSC	5,424,801	1.96%	6,243,361	2.33%	(10)
14.	Unleaded Regular Gas, NYMEX	5,205,995	1.88%	4,484,558	1.68%	(15)
15.	Soybean Meal, CBOT	4,904,471	1.77%	4,486,865	1.68%	(14)
16.	Soybean Oil, CBOT	4,658,302	1.68%	4,300,797	1.61%	(17)
17.	Silver (5,000 oz.) COMEX	3,913,609	1.42%	4,376,611	1.64%	(16)
18.	Live Cattle, CME	3,797,376	1.37%	4,265,710	1.60%	(18)
19.	British Pound, CME	3,410,333	1.23%	2,518,232	0.94%	(20)
20.	Wheat, CBOT	2,876,270	1.04%	3,237,709	1.21%	(19)
21.	T-Notes (5 Year), CBOT	2,532,828	0.92%	1,781,880	0.67%	(23)
22.	Live Hogs, CME	2,241,272	0.81%	1,891,905	0.71%	(22)
23.	T-Bills (90-Day), CME	1,869,610	0.68%	1,502,384	0.56%	(26)
24.	High Grade Copper, COMEX	1,853,185	0.67%	167,452	0.06%	(48)
25.	Coffee "C", CSC	1,774,050	0.64%	1,328,953	0.50%	(29)
26.	Cocoa (10 M Tons), CSC	1,635,917	0.59%	1,341,850	0.50%	(28)
27.	NYSE Composite Index, NYFE	1,574,641	0.57%	1,579,704	0.59%	(25)
28.	Soybeans, MIDAM	1,565,641	0.57%	1,341,983	0.50%	(27)
29.	Cotton #2, NYCE	1,534,611	0.55%	1,649,120	0.62%	(24)
30.	T-Bonds, MIDAM	1,461,046	0.53%	1,307,416	0.49%	(31)
31.	Canadian Dollar, CME	1,408,799	0.51%	1,263,664	0.47%	(32)
32.	Pork Bellies, CME	1,303,129	0.47%	1,310,976	0.49%	(30)
33.	Wheat, KCBOT	1,136,234	0.41%	1,236,084	0.46%	(33)
34.	MMI Maxi, CBOT	951,325	0.34%	1,086,550	0.41%	(35)
35.	Platinum, NYMEX	820,934	0.30%	1,190,529	0.45%	(34)
36.	Municipal Bond Index, CBOT	696,861	0.25%	1,068,028	0.40%	(36)
37.	US Dollar Index, NYCE	565,194	0.20%	743,299	0.28%	(37)
38.	Wheat, MGE	477,043	0.17%	413,073	0.15%	(40)
39.	Corn, MIDAM	455,289	0.16%	389,592	0.15%	(41)
40.	Oats, CBOT	433,567	0.16%	349,836	0.13%	(42)
41.	Feeder Cattle, CME	391,308	0.14%	465,274	0.17%	(39)
42.	Orange Juice (Frozen Conc.), NYCE	342,574	0.12%	304,104	0.11%	(44)
43.	T-Notes (5 Year), NYCE	222,271	0.08%	465,609	0.17%	(38)
44.	Lumber, CME	201,984	0.07%	273,903	0.10%	(45)
45.	Silver (1,000 oz.), CBOT	178,801	0.06%	254,713	0.10%	(46)
46.	Wheat, MIDAM	147,033	0.05%	347,127	0.13%	(43)
47.	Sugar #14, CSC	139,143	0.05%	102,654	0.04%	(52)
48.	Natural Gas, NYMEX	132,820	0.05%			
49.	T-Notes (2 Year), CBOT	110,789	0.04%	133,423	0.05%	(49)
50.	Australian Dollar, CME	105,241	0.04%	113,972	0.04%	(51)
	Contracts with Volume Over 100,000 Contracts 1/			2,261,735	0.85%	
	Contracts with Volume Under 100,000 Contracts	1,042,795	0.38%	738,366	0.28%	
	TOTAL	276,535,504	100.00%	267,384,278	100.00%	

1/ Contracts over 100,000 traded in 1989 but not over 100,000 in 1990.

RANK	EXCHANGE	CONTRACTS	%	CONTRACTS	%	RANK
1.	Chicago Board of Trade	120,769,784	43.67%	112,095,413	41.92%	(1)
2.	Chicago Mercantile Exchange	84,837,757	30.68%	87,122,225	32.58%	(2)
3.	New York Mercantile Exchange	36,357,871	13.15%	32,174,280	12.03%	(3)
4.	Commodity Exchange	15,496,931	5.60%	16,462,476	6.16%	(4)
5.	Coffee Sugar & Cocoa Exchange	8,973,911	3.25%	9,017,314	3.37%	(5)
6.	MidAmerica Commodity Exchange	3,975,528	1.44%	[illegible],703,899	1.39%	(6)
7.	New York Cotton Exchange	2,746,209	0.99%	3,311,597	1.24%	(7)
8.	New York Futures Exchange	1,656,968	0.60%	1,738,651	0.65%	(8)
9.	Kansas City Board of Trade	1,187,083	0.43%	1,294,995	0.48%	(9)
10.	Minneapolis Grain Exchange	478,077	0.17%	413,227	0.15%	(10)
11.	Chicago Rice & Cotton Exchange	55,385	0.02%	50,201	0.02%	(11)
	TOTAL	276,535,504	100.00%	267,384,278	100.00%	

COMMODITY FUTURES CONTRACTS TRADED 1986-1990

	CONTRACT UNIT	1990	1989	1988	1987	1986
Wheat	5,000 bu	2,876,270	3,237,709	3,377,738	1,929,306	2,090,316
Corn	5,000 bu	11,423,027	9,270,784	11,105,516	7,253,212	6,160,298
Oats	5,000 bu	433,567	349,836	354,578	291,108	140,952
Soybeans	5,000 bu	10,301,905	9,634,802	12,497,096	7,378,760	6,133,668
Soybean Oil	60,000 lb	4,658,302	4,300,797	4,896,194	3,912,417	3,182,963
Soybean Meal	100 tons	4,904,471	4,486,865	5,313,081	3,797,970	3,049,005
Silver	5,000 oz	2,256	2,397	4,165	12,092	
Silver	1,000 oz	178,801	254,713	481,566	509,965	511,239
Gold	100 oz	7,814	73,362	84,965	24,893	
Gold	Kilo	36,649	27,994	103,335	159,627	124,546
GNMA Mrtges, CDR	$100,000				7,583	24,078
Cash Settle GNMA	$100,000					7,351
T-Bonds	$100,000	75,499,257	70,303,195	70,307,872	66,841,474	52,598,811
T-Notes (6 1/2-10 yr)	$100,000	6,054,222	6,109,518	5,200,949	5,253,791	4,426,476
T-Notes (5-year)	$100,000	2,532,828	1,781,380	506,595		
T-Notes (2-year)	$200,000	110,789				
Japanese Government Bonds	20 Million Yen	3,062				
30-Day Interest Rate	$5,000,000	81,300	68,223	19,476		
Corporate Bond Index	$1,000 x Index			49	10,591	
Mortgage Backed	$100,000	16,848	24,815			
CBOE 250 Index	$500xCBOE 250		13,945	55,840		
TOPIX	5,000 Yen x In	230				
Institutional Index	$500 x Index				175	
Municipal Bond Index	$1,000 x Index	696,861	1,068,028	1,274,316	1,613,107	906,980
Major Market Index	$100 x Index					36,292
MMI Maxi	$250 x Index	951,325	1,086,550	1,175,531	2,630,887	1,738,916
NASDAQ-100	$250 x Index					3,743
CHICAGO BOARD OF TRADE		120,769,784	112,095,413	116,758,862	101,626,958	81,135,634
Live Hogs	30,000#	2,241,272	1,891,905	2,008,750	2,040,478	1,936,864
Pork Bellies, Fzn.	38,000 lb	1,303,129	1,310,976	1,186,599	1,097,010	1,100,339
Live Cattle	40,000#	3,797,376	4,265,710	5,477,205	5,229,294	4,690,538
Feeder Cattle	44,000 lb	391,308	465,274	702,438	645,877	411,441
Lumber	150,000 bd.ft.	201,984	273,903	371,489	437,089	502,530
Gold	100 oz			137	261,639	
T-Bills (90-day)	$1,000,000	1,869,610	1,502,384	1,373,553	1,927,006	1,815,162
Domestic CD (90-day)	$1,000,000				98	3,062
Eurodollar (3-month)	$1,000,000	34,695,625	40,818,269	21,705,223	20,416,216	10,824,914
Dollar/Pound Diff	$1,000,000	1,064	9,618			
Dollar/Mark Diff	$1,000,000	1,478	12,598			
Dollar/Yen Diff	$1,000,000	3,727	9,390			
One Month LIBOR	$3,000,000	84,148				
European Currency Unit	125,000				300	43,826
British Pound	62,500	3,410,333	2,518,232	2,616,068	2,592,177	2,701,330
Canadian Dollar	100,000	1,408,799	1,263,664	1,408,783	914,563	734,071
Deutschemark	125,000	9,169,230	8,186,221	5,662,109	6,037,048	6,582,145
Japanese Yen	12,500,000	7,437,235	7,823,739	6,433,132	5,358,556	3,969,777
Swiss Franc	125,000	6,524,893	6,093,885	5,283,406	5,268,276	4,998,430
Australian Dollar	100,000	105,241	113,972	75,960	53,335	
French Franc	250,000	50	2,030	3,932	10,437	2,685
Nikkei 225	$5 x Index	52,046				
S&P 500 Index	$500 x Index	12,139,209	10,560,455	11,353,898	19,044,673	19,505,273
S&P 100 Index	$200 x Index					3,514
S&P OTC 250	$500 x Index					5,270
CHICAGO MERCANTILE EX.		84,837,757	87,122,225	65,662,682	71,334,072	59,831,171

	CONTRACT UNIT	1990	1989	1988	1987	1986
Rice, Rough Old	200,000 lb					
Rice, Rough New	200,000 lb	55,385	50,201	47,627	31,114	3,095
Cotton Short Staple	50,000 lb					3
CHIC. RICE & COTTON EX.		55,385	50,201	47,627	31,114	3,098
Coffee "C"	37,500 lb	1,774,050	1,328,953	1,149,710	964,586	1,073,142
Sugar #11	112,000 lb	5,424,801	6,243,361	5,819,121	3,853,499	3,583,814
Sugar #12	112,000 lb					19,058
Sugar #14	112,000 lb	139,143	102,654	84,999	69,928	72,526
White Sugar	50 M tons			726	903	
Cocoa	10 M tons	1,635,917	1,341,850	1,268,050	895,465	777,765
Int'l Market Index	$250 x Index		496			
CPI-W	$1,000 x Index				2	8,776
COFFEE SUGAR & COCOA		8,973,911	9,017,314	8,322,606	5,784,383	5,535,081
Copper	25,000 lb		1,929,095	2,112,459	2,569,178	1,872,209
High Grade Copper	25,000 lb	1,853,185	167,452	924		
Silver	5,000 oz	3,913,609	4,376,611	4,664,655	5,055,652	3,849,687
Gold	100 oz	9,730,041	9,988,577	9,496,402	10,239,805	8,400,175
Aluminum	40,000 lb	96	741	2,610	8,500	52,627
Moody's Index	$500 x MCBI				11,482	
COMMODITY EXCHANGE		15,496,931	16,462,476	16,277,050	17,884,617	14,174,698
Wheat (5,000 bu)	5,000 bu	1,136,234	1,236,084	1,338,711	971,095	744,023
Grain Sorghum	5,000 bu	1,210	9,253			
Value Line Index	$500 x Index	35,558	41,268	79,872	505,551	953,985
Mini Value Line	$100 x Index	14,081	8,390	14,171	28,457	18,678
KANSAS CITY BD. OF TRD.		1,187,083	1,294,995	1,432,754	1,505,103	1,716,686
Wheat	1,000 bu	147,033	347,127	294,236	189,610	344,749
Corn	1,000 bu	455,289	389,592	429,219	311,722	406,694
Oats	1,000 bu	13,502	13,317	12,917	6,958	2,169
Soybeans	1,000 bu	1,565,641	1,341,983	863,934	417,620	680,156
Soybean Meal Old	20 tons				17	3,231
Soybean Meal New	20 tons	5,437	6,209	8,558	3,191	2,256
Live Cattle	20,000#	19,284	26,750	48,349	44,112	58,752
Live Hogs	15,000#	29,533	33,255	34,230	44,364	80,818
Silver	1,000 oz					649
New York Silver	1,000 oz	11,005	13,562	12,063	9,578	9,342
New York Gold	33.2 oz	15,084	9,698	14,652	17,957	21,111
Platinum	25 oz	1,012	1,654	2,874	4,342	5,944
Copper	12,500 lbs				2	892
Copper New	55,000 lbs				29	1,753
T-Bonds	$50,000	1,461,046	1,307,416	1,414,390	1,015,454	467,639
T-Bills	$500,000	3,884	8,541	22,203	25,592	34,690
T-Notes	$100,000	9	177	4,159		
British Pound	12,500	25,846	24,054	28,240	10,979	17,270
Swiss Franc	62,500	75,819	60,949	77,176	97,571	102,019
Deutschemark	62,500	82,534	53,954	49,993	85,009	74,662
Japanese Yen	6,250,000	54,283	59,133	44,257	58,836	47,601
Canadian Dollar	50,000	9,287	6,528	9,282	7,749	6,150
MIDAMERICA COMMODITY EX.		3,975,528	3,703,899	3,370,732	2,350,692	2,368,547

	CONTRACT UNIT	1990	1989	1988	1987	1986
Wheat	5,000 bu	477,043	413,073	423,542	310,599	283,900
White Wheat	5,000 bu	1,014	4	380	1,415	686
High Fructose Corn Syrup	48,000 lb			49	5,963	
Oats	5,000 bu	20	150	1,807		
MINNEAPOLIS GRAIN EX.		478,077	413,227	425,778	317,977	284,586
Cotton #2	50,000 lb	1,534,611	1,649,120	1,370,249	1,395,980	1,015,392
Orange Jce, Fzn. Conc.	15,000 lb	342.574	304,104	358,039	266,641	211,543
Propane	100,000 gal				5,799	11,966
European Currency Unit	$100,000	12,150	16,042	23,936	42,198	72,195
Five Year Treasury Note	$100,000	222,271	465,609	789,630	383,613	
Two Year Treasury Note	$200,000	69,409	133,423			
U.S. Dollar Index	$500 x Index	565,194	743,299	446,525	403,783	166,494
NEW YORK COTTON EX.		2,746,209	3,311,597	2,988,379	2,498,014	1,477,590
NYSE Composite Index	$500 x Index	1,574,641	1,579,704	1,668,732	2,915,915	3,123,668
Russell 2000	$500 x Index			32	5,644	
Russell 3000	$500 x Index				10,734	
T-Bond (30 Year)	$100,000	12,094	34,399			
Cmdty Rsrch Bureau Index	$500 x Index	70,233	124,548	205,951	136,832	59,324
NEW YORK FUTURES EX.		1,656,968	1,738,651	1,874,715	3,069,125	3,182,992
Palladium	100 oz	95,642	208,092	139,883	160,284	145,562
Platinum	50 oz	820,934	1,190,529	1,460,455	1,361,546	1,624,635
Potatoes(Cash Settlement)	100,000 lb				6,240	16,558
No. 2 Heating Oil, NY	1,000 bbl	6,376,871	5,740,967	4,935,015	4,293,395	3,275,044
Leaded Reg. Gasoline, NY	1,000 bbl					829,733
Unleaded Gasoline, NY	1,000 bbl	5,205,995	4,484,558	3,292,055	2,056,238	439,352
Residual Fuel Oil	1,000 bbl	76	605			
Natural Gas	10 Million BTU	132,820				
Propane	42,000 gal	38,636	14,664	23,749	15,312	
Crude Oil	1,000 bbl	23,686,897	20,534,865	18,858,948	14,581,614	8,313,529
NEW YORK MERCANTILE EX.		36,357,871	32,174,280	28,710,105	22,474,629	14,644,413
TOTAL FUTURES		276,535,504	267,384,278	245,871,290	228,876,684	184,354,496
PERCENT CHANGE		3.42%	8.75%	7.43%	24.15%	16.18%

OPTIONS VOLUME HIGHLIGHTS

1990 IN COMPARISON WITH 1989

		1990		1989		
RANK	EXCHANGE	CONTRACTS	%	CONTRACTS	%	RANK
1.	Chicago Board of Trade	33,461,799	52.20%	26,255,904	47.35%	(1)
2.	Chicago Mercantile Exchange	18,156,855	28.32%	17,532,232	31.62%	(2)
3.	New York Mercantile Exchange	6,100,856	9.52%	6,316,183	11.39%	(3)
4.	Coffee Sugar & Cocoa Exchange	3,020,526	4.71%	2,200,530	3.97%	(5)
5.	Commodity Exchange	2,786,690	4.35%	2,590,479	4.67%	(4)
6.	New York Cotton Exchange	447,688	0.70%	444,138	0.80%	(6)
7.	Kansas City Board of Trade	65,794	0.10%	38,169	0.07%	(8)
8.	MidAmerica Commodity Exchange	29,310	0.05%	23,351	0.04%	(9)
9.	New York Futures Exchange	29,045	0.05%	43,028	0.08%	(7)
10.	Minneapolis Grain Exchange	4,531	0.01%	2,116	0.00%	(10)
	TOTAL	64,103,094	100.00%	55,446,130	100.00%	

OPTIONS CONTRACTS TRADED 1986-1990

OPTION	CONTRACT UNIT	1990	1989	1988	1987	1986
Corn	5,000 bu	2,116,302	1,519,164	1,591,223	661,519	575,634
Soybeans	5,000 bu	2,089,382	1,975,440	3,245,134	1,242,072	775,139
Oats	5,000 bu	7,334				
Wheat	5,000 bu	482,941	484,952	445,575	124,598	9,314
Soybean Oil	60,000 lbs	138,089	101,158	124,131	85,735	
Soybean Meal	100 tons	181,429	112,474	172,428	81,213	
Silver	1,000 oz	1,398	8,346	8,303	10,009	3,081
T-Bonds	$100,000	27,315,411	20,784,019	19,509,425	21,720,402	17,314,349
T-Notes (10 Year)	$100,000	936,754	1,168,196	1,011,626	1,421,852	1,000,682
T-Notes (5 Year)	$100,000	87,440				
Japanese Government Bonds	20 Million Yen	475				
Mortgage Backed	$100,000	19,231	13,564			
Muni Bonds	$1,000 x Index	85,613	88,591	171,788	118,632	
CHICAGO BOARD OF TRADE		33,461,799	26,255,904	26,279,633	25,466,032	19,678,199
Live Hogs	30,000#	171,306	127,258	130,206	147,859	105,516
Live Cattle	40,000 #	713,276	886,858	1,067,593	1,222,397	718,099
Pork Bellies	38,000 lbs	46,286	53,643	12,143	15,112	1,981
Feeder Cattle	44,000 lbs	168,310	152,483	163,433	134,930	
Lumber	150,000 bd.-ft.	29,717	17,450	22,171	6,483	
Eurodollar	$1,000,000	6,859,625	6,001,522	2,599,839	2,569,957	1,757,426
British Pound	62,500	501,187	405,993	543,380	569,062	496,591
Deutschemark	125,000	3,430,374	3,795,135	2,734,079	3,125,687	2,205,579
Swiss Franc	125,000	1,130,447	1,488,682	1,069,798	1,053,323	817,897
Japanese Yen	12,500,000	3,116,130	3,127,247	2,944,889	2,250,813	864,586
Canadian Dollar	100,000	283,609	274,362	313,901	48,690	26,465
Australian Dollar	100,000	27,381	23,257	6,811		
T-Bill	$1,000,000	32,283	16,713	5,916	11,634	63,768
Nikkei 225	$5 x Index	8,793				
S&P 500	$500 x Index	1,638,131	1,161,629	734,827	1,877,295	1,886,445
CHICAGO MERCANTILE EXCH		18,156,855	17,532,232	12,348,986	13,033,142	8,944,353
Sugar	112,000 lbs	2,393,016	1,932,752	1,536,345	432,927	254,491
Coffee	37,500 lbs	282,566	114,216	65,204	25,639	5,319
Cocoa	10 M tons	344,944	153,562	95,509	13,910	999
COFFEE SUGAR & COCOA EXCH		3,020,526	2,200,530	1,697,058	472,476	260,809
Gold	100 oz	1,931,804	1,603,799	1,698,696	2,080,067	1,646,791
Silver	5,000 oz	747,499	752,645	872,106	918,064	579,425
High Grade Copper	25,000 lbs	107,387	12,310	2		
Copper	25,000 lbs		221,725	402,790	612,850	127,501
COMMODITY EXCHANGE		2,786,690	2,590,479	2,973,594	3,610,981	2,353,717
Wheat	5,000 bu	65,794	38,169	30,178	33,228	18,302
KANSAS CITY BOARD OF TRADE		65,794	38,169	30,178	33,228	18,302
Soybeans	1,000 bu	23,578	20,019	21,043	12,317	6,635
Soft Red Winter Wheat	5,000 bu	3,408	1,672	533	530	7,492
Gold	33.2 oz	2,324	1,660	77	74	91
MIDAMERICA COMMODITY EXCH		29,310	23,351	21,653	12,921	14,218
American Spring Wheat	5,000 bu	4,509	2,104	1,847	1,229	3,259
European Spring Wheat	5,000 bu	22	12			
MINNEAPOLIS GRAIN EXCHANGE		4,531	2,116	1,847	1,229	3,259
Cotton	50,000 lbs	284,991	424,841	124,260	73,480	60,507
Orange Juice, Fzn. Conc.	15,000 lbs	63,029	13,175	5,873	685	3,354
Five Year U.S. T-Note	$100,000		1,278	13,479		
U.S. Dollar Index	$500 x Index	99,668	4,844	10,525	14,538	198
NEW YORK COTTON EXCHANGE		447,688	444,138	154,137	88,703	64,059
NYSE Composite Index	$500 x Index	25,501	39,482	23,304	206,631	296,303
CRB Index	$500 x Index	3,544	3,546	1,007		
NEW YORK FUTURES EXCHANGE		29,045	43,028	24,311	206,631	296,303
Heating Oil	42,000 gal	406,810	298,136	125,812	143,605	
Crude Oil	1,000 bbl	5,254,612	5,685,953	5,480,281	3,117,037	135,266
Unleaded Gasoline	1,000 bbl	435,685	332,094			
Platinum	50 oz	3,749				
NEW YORK MERCANTILE EXCHANGE		6,100,856	6,316,183	5,606,093	3,260,642	135,266
TOTAL OPTIONS		64,103,094	55,446,130	49,137,490	46,185,985	31,770,613
PERCENT CHANGE		15.61%	12.84%	6.39%	45.37%	58.50%

SOURCE: FUTURES INDUSTRY ASSOCIATION

Alcohol

Salient Statistics of Alcohol in the United States In Millions of Gallons[3]

	Ethyl Alcohol & Spirits		Denatured Alcohol[2]				
				Consumption			
Year	Production[4]	Stocks Dec. 31	Production	Total	For Fuel Use	Stocks Dec. 31	Production of Methanol (Synthetic) (ths. tonnes)
1976	498.8	85.3	225.3	225.6	—	3.2	2,831
1977	498.3	71.4	223.8	224.6	—	2.6	2,926
1978	506.7	71.2	227.7	228.8	—	2.7	2,922
1979	570.3	53.6	260.7	260.9	—	4.1	3,341
1980	643.2	72.0	301.2	281.5	14.5	10.1	3,244
1981	571.2	83.3	230.7	227.1	5.7	5.4	3,890
1982	601.1	95.0	284.9	277.9	41.9	6.6	3,426
1983	698.5	78.6	354.4	356.7	65.8	6.6	3,620
1984	631.3	150.6	416.9	410.5	116.7	24.5	3,712
1985	681.0	46.9	512.2	513.8	222.9	26.5	2,269
1986	645.4	47.7	408.6	444.6	226.7	23.8	3,268
1987	730.3	43.4	442.5	460.8	208.3	9.7	3,418
1988	777.6	39.7	463.7	469.9	216.0	9.2	3,693
1989[1]	960.1	54.3	514.3	502.2	200.5	24.5	3,238
1990							

[1] Preliminary. [2] At denaturing plants. [3] Ethyl alcohol in proof gallons; denatured alcohol in wine gallons. [4] Represents alcohol and spirits of 190° of proof and over. *Source: Alcohol and Tobacco Division*

T.1

U.S. Production of Ethyl Alcohol[1] & Spirits In Millions of Tax Gallons[2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1976	41.6	36.2	44.0	39.3	36.0	37.0	45.5	46.0	43.3	39.3	42.8	47.7	498.8
1977	36.5	37.7	42.8	39.2	43.5	43.2	40.3	40.9	41.0	44.7	48.9	39.7	498.3
1978	35.8	41.1	50.4	42.2	31.3	48.7	42.5	45.4	50.5	40.3	38.0	40.7	506.7
1979	42.8	41.3	49.3	47.3	42.9	48.2	43.8	46.0	53.7	49.4	51.0	54.6	570.3
1980	57.4	52.7	55.3	55.2	54.2	45.7	52.8	46.4	57.3	64.6	47.9	53.7	643.2
1981	49.2	44.3	49.3	51.0	44.0	42.2	45.1	55.8	53.1	44.0	47.8	45.4	571.2
1982	42.9	39.8	48.2	37.6	41.9	52.6	51.9	44.3	53.3	61.9	61.7	65.0	601.1
1983	60.9	58.6	59.4	46.1	56.6	60.2	63.8	56.9	59.2	55.6	53.9	47.2	698.5
1984	49.3	45.9	54.1	58.2	50.9	49.7	48.4	48.4	51.8	60.5	50.4	63.7	631.3
1985	63.3	44.8	60.6	55.6	56.3	63.7	58.5	55.5	59.4	64.1	51.8	47.1	681.0
1986	45.6	51.5	56.5	52.4	55.8	50.1	48.9	50.5	56.7	62.3	54.2	60.8	645.4
1987	62.2	54.9	55.8	60.2	62.0	57.4	60.1	63.4	63.8	63.0	60.6	66.9	730.3
1988	62.5	61.3	64.2	60.9	69.8	61.3	66.0	62.8	61.2	69.7	69.7	67.8	777.6
1989[3]	82.2	69.8	68.9	68.6	79.3	76.1	77.6	81.0	89.0	92.0	88.8	86.8	960.1
1990[3]	87.4												

[1] At industrial alcohol plants. [2] A "tax gallon" is the alcoholic equivalent of a U.S. gallon at 60 degrees Fahrenheit, containing 50% of ethyl alcohol by volume. [3] Preliminary. *Source: Bureau of Alcohol, etc.*

T.3

U.S. Stocks of Ethyl Alcohol & Spirits In Millions of Tax Gallons

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1985	150.6	148.4	128.9	126.5	130.7	115.9	99.4	94.5	61.0	53.2	47.4	48.0
1986	46.9	41.4	41.1	45.7	46.4	44.5	45.4	44.1	39.8	35.8	47.6	45.7
1987	47.7	49.0	51.5	41.3	45.5	48.9	44.7	46.9	44.0	38.6	34.3	41.7
1988	43.4	48.3	45.9	36.4	39.5	34.7	31.3	44.0	38.6	28.4	35.9	36.3
1989[1]	39.7	45.0	48.1	46.2	43.4	45.7	39.7	44.9	40.5	42.5	42.5	49.5
1990[1]	54.3	50.9										

[1] Preliminary. *Source: Bureau of Alcohol, etc.*

U.S. Consumption (Withdrawals) of Denatured In Millions of Wine Gallons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1985	40.0	31.8	42.9	53.3	52.2	43.3	40.7	44.5	36.5	46.6	40.0	41.9	513.8
1986	45.1	33.0	37.3	38.9	40.6	33.5	36.1	35.6	37.4	35.0	38.1	34.1	444.6
1987	34.9	33.6	44.8	38.7	37.4	41.8	37.2	40.9	41.4	39.4	30.3	40.3	460.8
1988	34.8	35.7	45.8	40.8	41.6	42.2	35.7	38.6	38.7	38.5	36.9	39.7	469.9
1989[1]	37.8	38.0	42.1	36.3	45.8	45.6	39.9	40.9	41.3	41.4	51.7	41.4	502.2
1990[1]	65.5												

[1] Preliminary. *Source: Bureau of Alcohol, etc.*

T.2

Aluminum

Paying the price for exuberant expansion during the mid-1980s and for the optimism of 1989, when capacity increased and demand didn't, aluminum prices stumbled in 1990. Prices averaged about 72 cents a pound for the full year, compared with 87.8 cents in 1989. The market was very volatile, starting the year at around 65.5 cents a pound in January, rallying to 88 cents in September, and then falling back to below 80 cents by year-end.

There was an important price development on the London Metal Exchange (LME) in 1990, the result of a major shift in the ownership of LME aluminum stocks from diversified holders of warehouse receipts into the hands of one major merchant house. The latter firm apparently received delivery of an estimated 170,000 tonnes of aluminum from the LME in the fall of 1990. In November, the market stretched out to a backwardation premium of more than $200 a tonne, which attracted 191,200 tonnes of aluminum into LME warehouses. This brought stocks to a record 315,600 tonnes.

The backwardation was thought to have flushed out much of the excess supply that was hidden off of the LME. Analysts believed that left only minimal amounts of uncommitted material available.

For the first nine months of 1990, primary domestic aluminum production was estimated at 3.14 million tonnes, compared with full-year 1989's primary production of 4.03 million. Implied domestic production for 1990 was 4.18 million tonnes. Secondary recovery for 1990's first nine months totaled 1.43 million tonnes, compared with 2.05 million for all of 1989. New recovery in the 1990 period accounted for 676,000 tonnes, versus old recovery of 766,000.

Imports for consumption during the first eight months of 1990 totaled 922,000 tonnes, compared with all of 1989's 1.26 million. The total consists of figures for crude metals and alloys and statistics for plates, sheets, and bars, but does not include scrap metal imports. Crude metal and alloy imports for the eight months of 1990 were 696,000 tonnes.

Canada was the largest supplier of aluminum to the U.S., providing 912,770 tonnes in 1989 and 691,939 tonnes in the first eight months of 1990. Japan and the UK were also suppliers.

U.S. scrap metal imports for all of 1989 totaled 200,517 tonnes, and for the first eight months of 1990 were 142,062. Canada supplied most of the scrap imports.

For the first eight months of 1990, total new supply, which is made up of primary production, secondary recovery, and imports for consumption, was 4.88 million tonnes, compared with full-year 1989's new supply of 7.34 million. The end-year stock of aluminum was estimated at 1.82 million tonnes in 1989 and stood at 1.97 million at the end of August 1990.

Futures Markets

Aluminum futures are traded on the New York Commodity Exchange (COMEX) and the London Metal Exchange (LME).

World Production of Primary Aluminum In Thousands of Metric Tons

Year	Australia	Austria	Brazil	Canada	China	France	West Germany	Italy	Japan	Norway	Spain	Switzerland	United Kingdom	United States	USSR	Venezuela	World Total
1983	478	94	401	1,091	400	361	743	196	256	713	358	76	253	3,353	2,000	335	13,904
1984	758	96	455	1,227	400	342	777	230	287	765	381	79	288	4,099	2,100	386	15,714
1985	851	94	549	1,282	410	293	745	224	227	743	370	73	275	3,500	2,200	396	15,398
1986	882	93	757	1,355	410	322	765	243	140	726	350	80	276	3,037	2,300	424	15,413
1987	1,004	93	843	1,540	615	323	738	233	41	806	341	73	294	3,343	2,400	440	16,385
1988[1]	1,150	95	874	1,535	800	328	744	222	35	864	323	72	300	3,944	2,400	455	17,608
1989[2]	1,244	93	935	1,555	825	335	742	220	35	859	352	71	297	4,030	2,400	500	17,980
1990[2]	1,220		900	1,550	850		740			860				4,000	2,450		18,100

[1] Preliminary. [2] Estimate. *Source: Bureau of Mines*

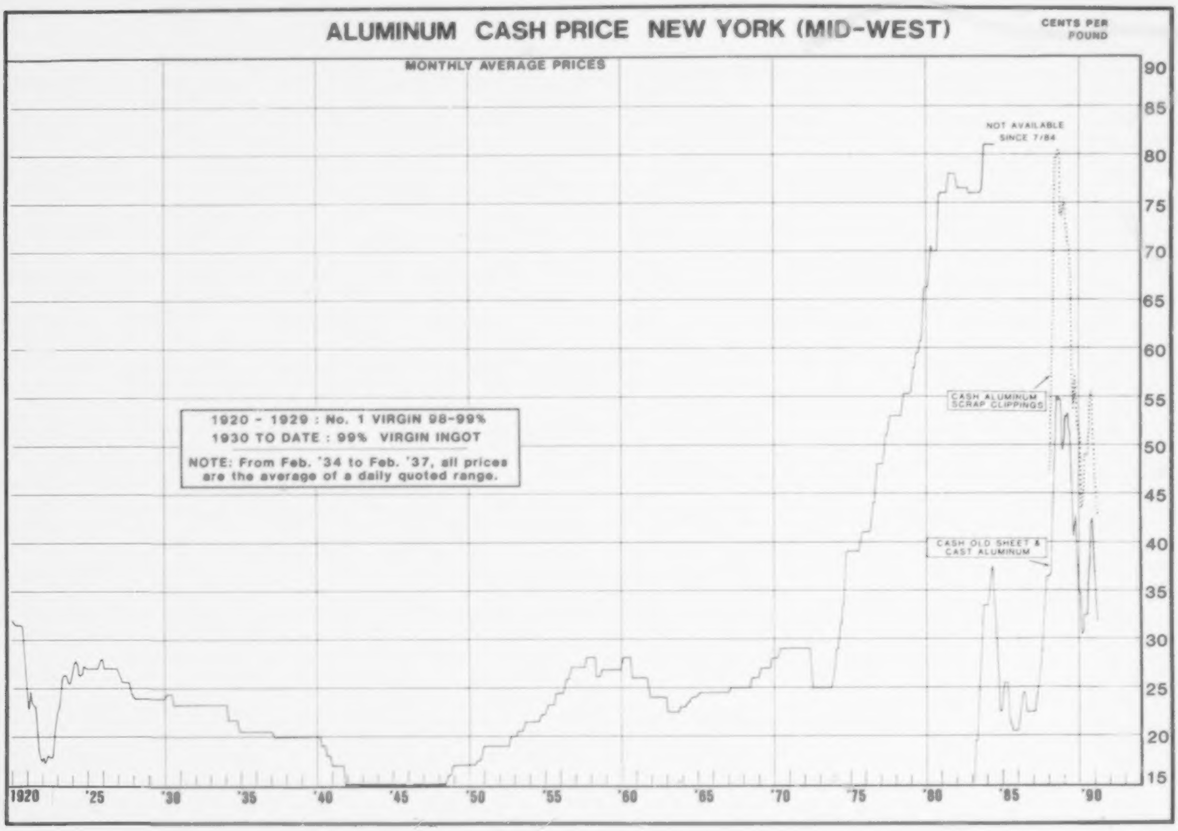
T.4

U.S. Production of Primary Aluminum (Domestic & Foreign Ores) In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total[1]
1983	253	223	248	245	265	261	284	297	299	320	318	340	3,353
1984	342	324	350	348	365	351	349	344	329	338	325	334	4,099
1985	329	289	312	295	304	288	292	289	280	285	265	271	3,499
1986	273	251	281	275	284	241	231	235	231	243	239	252	3,036
1987	262	238	266	263	275	272	282	286	286	301	301	316	3,343
1988	320	304	330	324	336	323	334	333	327	339	332	344	3,944
1989[2]	346	312	347	334	347	335	346	341	323	328	328	343	4,030
1990[2]	345	311	345	331	342	330	340	341	332				

[1] Final annual totals. [2] Preliminary. *Source: Bureau of Mines*

T.9



Salient Statistics of Aluminum in the U.S. In Thousands of Metric Tons

Year	Net Import Reliance as a % of Apparent Consumption	Production		Primary Shipments[1]	Recovery from Scrap		Apparent Consumption	Wrought Pots				Net Shipments[5] by Producers				Total All Net Shipments
		Primary	Secondary		Old	New		Plate, Sheet, Foil	Rolled Structural Shapes[2]	Extruded Shapes[3]	All	Castings: Permanent Mold	Die	Sand	All	
1985	16	3,500	1,762	6,382	850	912	5,174	3,291	357	1,267	5,031	168	698	93	1,011	6,042
1986	26	3,037	1,773	6,545	784	989	5,143	3,397	337	1,335	5,179	155	749	77	1,032	6,211
1987	23	3,343	1,986	6,813	852	1,134	5,469	3,740	346	1,351	5,549	181	685	113	1,012	6,562
1988[4]	7	3,944	2,122	6,851	1,045	1,077	5,373	3,780	334	1,337	5,567	201	700	115	1,055	6,621
1989[6]	[7]	4,030	2,054	6,857	1,011	1,043	4,959	3,899	339	1,280	5,633				1,096	6,728
1990[6]	[7]	4,000			1,000		4,800									

[1] To Domestic Industry. [2] Also rod, bar & wire. [3] Also rod, bar, tube, blooms & tubing. [4] Preliminary. [5] Consists of total shipments less shipments to other mills for further fabrication. [6] Estimate. [7] Net exports. *Source: U.S. Bureau of Mines*

T.8

U.S. Supply and Distribution of Aluminum In Thousands of Metric Tons

Year	Apparent Consumption	Production: Primary	Production: From Old Scrap	Imports	Exports	Inventories (Dec. 31): Private	Inventories (Dec. 31): Government	Year	Apparent Consumption	Production: Primary	Production: From Old Scrap	Imports	Exports	Inventories (Dec. 31): Private	Inventories (Dec. 31): Government
1983	5,035	3,353	820	1,091	776	2,265	2	1988[1]	5,373	3,944	1,045	1,620	1,247	1,883	2
1984	5,279	4,099	825	1,477	734	2,653	2	1989[2]	4,959	4,030	1,011	1,470	1,613	1,822	2
1985	5,174	3,500	850	1,420	908	2,343	2	1990[2]	4,800	4,000	1,000	1,500	1,700	1,800	2
1986	5,143	3,037	784	1.967	753	2,235	2	1991							

[1] Preliminary [2] Estimate *Source: U.S. Bureau of Mines*

T.8A

ALUMINUM

U.S. Aluminum Products Distribution of End-Use Shipments In Thousands of Tonnes

Year	Building & Construction	Consumer Durables	Containers & Packaging	Electrical	Exports	Machinery & Equip.	Transportation	Other	Total
1983	1,302	478	1,777	589	563	353	1,062	261	6,420
1984	1,300	502	1,828	681	488	377	1,375	279	7,040
1985	1,375	484	1,862	642	546	377	1,383	264	6,928
1986	1,432	540	1,926	626	413	383	1,372	252	6,958
1987	1,441	576	2,052	620	569	401	1,500	223	7,382
1988	1,316	588	2,036	671	787	435	1,536	269	7,638
1989[1]	1,296	554	2,104	679	1,060	443	1,515	266	7,917

[1] Preliminary. *Source: Bureau of Mines*

Average Annual Primary Aluminum Prices (Dollars per Pound)

Year	Average annual price	Based on constant 1987 dollars
1909	.220	3.144
1910	.223	3.140
1911	.201	2.830
1912	.220	2.972
1913	.236	3.233
1914	.186	2.479
1915	.340	4.359
1916	.607	6.896
1917	.516	4.825
1918	.335	2.915
1919	.321	2.359
1920	[1].327	2.031
1921	.221	1.673
1922	[2].187	1.533
1923	.254	1.999
1924	.270	2.160
1925	.272	2.141
1926	.270	2.144
1927	.254	2.065
1928	.243	1.959
1929	[3].243	1.959
1930	.238	1.966
1931	.233	2.118
1932	.233	2.377
1933	.233	2.453
1934	.234	2.251
1935	.200	1.886
1936	[4].205	1.933
1937	.199	1.793
1938	.200	1.818
1939	.200	1.852
1940	.187	1.700
1941	.165	1.411
1942	.150	1.200
1943	.150	1.172
1944	.150	1.154
1945	.150	1.128
1946	.150	.909
1947	.150	.798
1948	.157	.782
1949	.170	.850
1950	.177	.873
1951	.190	.891
1952	.194	.894
1953	.209	.951
1954	.218	.977
1955	.237	1.026
1956	.240	1.003
1957	[5].254	1.029
1958	.248	.985
1959	.247	.958
1960	.260	.988
1961	.255	.961
1962	.239	.882
1963	.226	.823
1964	.237	.846
1965	.245	.853
1966	.245	.826
1967	.250	.820
1968	.256	.801
1969	.272	.805
1970	.287	.804
1971	.290	.769
1972	.250	.633
1973	[6].264	.628
1974	.431	.940
1975	.348	.689
1976	.412	.770
1977	.478	.837
1978	.510	.831
1979	.707	1.061
1980	.761	1.043
1981	.598	.748
1982	.468	.552
1983	.683	.772
1984	.611	.666
1985	.488	.517
1986	.559	.576
1987	.723	.723
1988	1.101	1.068
1989	.878	.816
1990	.740	.661

[1] 98%- to 99%-pure aluminum. [2] 98%-pure aluminum metal. [3] 99%-pure aluminum metal. [4] 99% plus-pure virgin ingot aluminum. [5] 99.5%-pure unalloyed aluminum ingot. [6] U.S. market spot price. *Sources: American Bureau of Metal Statistics, Engineering & Mining Journal, and Metals Week.*

Average Price of Cast Aluminum Scrap (Crank Cases) in Chicago Area[1] In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1983	15.12	17.50	19.50	19.50	23.50	25.50	27.65	31.80	33.50	33.50	33.50	33.50	26.17
1984	34.83	35.50	36.59	37.50	35.64	32.98	30.50	29.11	25.55	23.07	22.50	23.67	30.62
1985	25.50	25.50	25.50	25.50	23.23	21.50	21.40	20.50	20.50	20.50	20.50	22.55	22.55
1986[1]	24.36	26.61	29.64	30.91	25.40	22.62	23.00	24.67	26.62	24.93	24.05	23.55	25.53
1987	25.75	27.56	30.00	31.64	33.10	34.82	36.20	40.24	41.55	43.68	41.87	42.82	35.77
1988	45.50	47.40	52.67	55.64	53.93	55.00	54.65	54.85	54.69	50.64	49.50	50.50	52.08
1989	53.02	52.97	53.41	51.90	51.14	47.59	42.97	40.63	43.30	40.14	37.75	35.65	45.87
1990	34.68	30.50	30.77	32.50	32.50	32.50	35.93	37.50	41.97	42.50	40.58	39.00	35.91
1991	33.50												

[1] Dealer buying prices—prior to 1986 prices are for the N.Y. area. *Source: American Metal Market* T.12

Aluminum Products (Ingot & Mill Products) Shipments[1] in the U.S. In Million Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	971	972	1,185	1,054	1,224	1,205	1,077	1,212	1,202	1,103	1,141	1,275	13,622
1984	1,107	1,268	1,388	1,133	1,301	1,293	1,115	1,244	1,139	1,304	1,153	1,210	14,655
1985	1,166	1,137	1,291	1,228	1,304	1,208	1,199	1,228	1,264	1,278	1,123	1,032	14,456
1986	1,187	1,176	1,401	1,340	1,390	1,202	1,115	1,132	1,117	1,218	1,045	1,064	14,386
1987	1,170	1,241	1,329	1,284	1,306	1,433	1,346	1,261	1,334	1,307	1,219	1,353	15,584
1988	1,186	1,199	1,402	1,246	1,331	1,416	1,214	1,357	1,334	1,293	1,322	1,155	15,453
1989[2]	1,266	1,232	1,419	1,246	1,306	1,365	1,205	1,369	1,299	1,278	1,169	1,071	15,468
1990[2]	1,234	1,154	1,313	1,224	1,355	1,318	1,257	1,282	1,233				

[1] Mill products & pig & ingot (net shipments). [2] Preliminary. *Source: Bureau of the Census* T.10

U.S. Aluminum Inventories, Total (Ingot, Mill Prod. & Scrap) In Million Pounds

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1983	6,180	6,140	6,075	5,870	5,723	5,558	5,418	5,451	5,353	5,236	5,273	5,191
1984	4,994	5,200	5,225	5,295	5,435	5,579	5,618	5,775	5,794	5,881	5,889	5,922
1985	5,850	5,900	5,824	5,796	5,749	5,712	5,595	5,579	5,512	5,439	5,324	5,241
1986	5,165	5,165	5,158	5,053	5,097	5,044	5,044	5,083	5,057	4,977	4,927	4,902
1987	4,928	4,896	4,772	4,696	4,584	4,515	4,474	4,393	4,303	4,152	4,211	4,245
1988	4,175	4,272	4,363	4,343	4,941	4,344	4,215	4,235	4,175	4,175	4,134	4,119
1989[1]	4,151	4,189	4,163	4,160	4,246	4,224	4,289	4,373	4,253	4,158	4,064	3,991
1990[1]	4,016	4,019	4,035	3,914	3,974	3,907	3,911	4,076	3,976	4,040		

[1] Preliminary. *Source: Bureau of Mines* T.5

Aluminum Exports (Metal & Alloys, Crude) from the U.S. In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	50.9	12.2	14.0	46.4	8.2	14.9	37.1	33.2	44.5	27.4	50.8	24.1	360.7
1984	24.5	20.1	19.9	7.6	23.4	24.0	22.1	37.5	23.9	17.9	32.9	32.3	286.2
1985	40.6	31.9	22.7	28.1	29.8	53.9	37.9	25.9	26.9	19.4	18.6	11.9	347.5
1986	21.8	25.5	18.1	12.8	17.0	11.4	11.0	15.6	16.3	19.2	17.3	21.3	207.4
1987	15.4	23.9	21.3	23.6	15.2	14.6	26.3	27.8	27.9	20.6	29.1	35.5	281.1
1988	18.4	13.7	19.8	20.9	34.5	43.4	41.6	44.3	39.0	25.7	47.5	51.3	400.1
1989[1]	34.8	41.8	40.2	33.3	34.1	44.6	46.2	52.0	46.1	68.8	72.7	80.0	593.0
1990[1]	79.0	65.1	55.3	61.4	41.4	48.6	41.5	39.0					

[1] Preliminary. *Source: Bureau of the Census* T.7

Aluminum General Imports (Metal & Alloys, Crude) into the U.S. In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	48.2	42.6	33.2	66.9	84.6	82.9	72.1	65.7	56.6	58.2	63.6	40.3	714.9
1984	70.9	94.9	114.3	68.8	108.8	73.9	66.8	68.0	89.9	93.0	68.6	57.4	975.3
1985	68.6	56.9	80.6	66.4	72.9	76.9	68.9	72.9	93.8	86.2	69.6	58.1	871.7
1986	82.1	100.6	127.8	131.0	151.8	124.3	119.0	123.5	96.3	107.3	91.1	77.3	1,332.1
1987	114.3	113.0	100.8	96.4	104.2	121.2	109.4	96.3	95.5	112.7	94.0	92.2	1,250.6
1988	101.2	92.0	104.9	89.0	92.1	80.6	79.6	80.0	92.4	81.9	82.0	55.0	1,030.6
1989[1]	99.4	78.6	83.3	92.4	75.5	73.9	71.8	91.9	83.6	65.2	53.9	54.2	923.0
1990[1]	84.4	73.4	85.4	85.1	90.4	94.0	102.6	82.1					

[1] Preliminary. *Source: Bureau of the Census* T.6

Antimony

Most primary antimony is a byproduct of mining, smelting, or refining of other metals and ores that contain relatively small amounts of antimony. U.S. output, primarily from lead or silver-copper ores, is negligible. World mine production in 1990 was estimated at 69,400 tonnes, 1.5 percent above the 1989 level. Bolivia, China and South Africa are among the largest producing nations.

In May 1990, Bolivia withdrew from the arrangement to report a joint Bolivian-Chinese quarterly producer price for antimony concentrates. The published price had failed to achieve its goal of coordinating antimony production and trade practices between the two producers. The New York dealer price for antimony fell by 12 percent in 1990 to 83 cents/lb. Dealers attributed the decline to Chinese sales that flooded the market.

U.S. antimony production from domestic materials is mainly from recycling lead-antimony batteries. Total secondary output fell to 16,000 tonnes in 1990 from 18,249 in 1989. About 97 percent of all secondary antimony was recovered as antimonial lead, which then was used to make new batteries. Imports for consumption increased to 30,000 tonnes from 25,165, and apparent consumption rose to 41,300 tonnes from 40,236 in 1989. Antimony and its oxides were consumed in about 250 plants located east of the Mississippi River.

The chief end use of antimony compounds was in flame retardants, a growing market because of the demand for fire-resistant textiles and plastics. Batteries, chemicals, ceramics, and glass are other major uses.

World Mine Production of Antimony (Content of Ore) In Metric Tons

Year	Australia	Austria	Bolivia	Canada	China[1]	Czechoslovakia	Italy	Mexico[2]	Morocco	Peru[5]	South Africa	Turkey	United States	USSR	Yugoslavia[4]	World Total[1]
1988	1,200	228	9,943	3,171	30,000	1,000	308	2,185	555	420	6,264	1,945	N.A.	9,600	725	67,992
1989[3]	1,200	230	9,100	2,882	30,000	1,000	310	2,500	500	400	6,100	2,000	N.A.	9,600	750	68,362
1990[1]			8,500					2,500			5,000				700	69,400

[1] Estimate. [2] Includes antimony content of miscellaneous smelter products. [3] Preliminary. [4] Metal. [5] Recoverable.
Source: Bureau of Mines

T.13

Salient Statistics of Antimony in the United States In Metric Tons

Year	Net Import Reliance as a % of Apparent Consumption	Production				Imports[5]			Exports[3]	Industry Stocks, Dec. 31[2]					
		Shipments of Mine	Primary[2]		Secondary (Alloys)[2]	Ore		Metal Gross Weight		Ores & Concentrates	Metallic	Oxide	Sulfide	Residues & Slag	Total[6]
			Mine	Smelter		Gross Weight	Sb Content								
1988[4]	65			17,616	16,172		3,728	8,044	1,227		2,360	3,840	24	274	6,498
1989[1]	58			18,954	18,249		4,550	8,613	1,850		1,873	4,077	16	302	6,268
1990[4]	64			20,000	16,000				3,500						6,500

[1] Preliminary [2] Antimony content. [3] Antimony ore, metal & compounds. [4] Estimate. [5] Imports for consumption. [6] Including primary antimony residues & slag. *Source: Bureau of Mines*

T.15

Industrial Consumption of Primary Antimony in the United States In Metric Tons (Antimony Content)

Year	Metal Products											Non-Metal Products				
	Ammunition	Antimonial Lead	Sheet & Pipe	Bearing Metal & Bearings	Cable Covering	Solder	Type Metal	Total All Metal Products	Plastics	Ammun. primers	Ceramics & Glass	Rubber Pdt's.	Pigments	Plastics	Total	Grand Total
1987	N.A.	1,102	76	187	N.A.	347	8	2,313	4,139	32	1,122	N.A.	279	750	2,385	10,374
1988	N.A.	1,538	181	178		256	6	2,781	5,469	34	1,221	29	179	916	2,530	12,067
1989[1]	521	1,872	157	129		245	4	3,016	5,842	20	1,050	97	196	1,141	2,668	13,424

[1] Preliminary. [2] Estimated coverage based on 77% of the industry. *Source: Bureau of Mines*

T.16

Antimony Imported (for Consumption) into the U.S. and Price Ranges

Year	Imported for Consumption							Foreign Metal (Duty Paid Delivery New York)	Antimony Trioxide	Metal[2]	Domestic (Based on Antimony in Alloy)
	Antimony Ore Value Ths. $	Needle or Liquated Antimony		Antimony Metal		Antimony Oxide		¢ Lb.			
		Gross Weight Tonnes	Value $ Ths.	Tonnes	Value $ Ths.	Tonnes	Value $ Ths.				
1987	5,634	93	112	8,801	18,171	10,274	20,024	105–116	125–135	110.6	200
1988	5,543	109	432	16,604	34,837	9,586	20,164	101–116	135–143	103.9	200
1989[1]	8,462			10,621	21,143	9,994	19,770	84–103	143	94.3	200

[1] Preliminary. [2] N.Y. Dealer Price, 99.5% to 99.6%, C.I.F. U.S. ports. *Source: Bureau of Mines*

T.17

Apples

World Production[2] of Apples, Fresh (Dessert & Cooking) In Thousands of Metric Tons

Crop Year	Argentina	Australia	Canada	France	Hungary	Italy	Japan	Mexico	Netherlands	South Africa	Spain	Turkey	United States[2]	West Germany	Yugoslavia	World Total
1976	576	275	409	1,598		2,143	879	329	380	381	1,008		2,936	1,487	483	15,501
1977	820	301	411	1,186		1,828	959	297	315	289	672		3,057	1,176	381	13,934
1978	810	258	452	1,768		1,874	844	313	510	367	1,015		3,446	1,783	381	16,589
1979	972	345	435	1,769		2,023	853	338	450	372	1,097		3,694	1,951	428	16,605
1980	908	345	553	1,802		1,966	960	282	450	450	859		4,005	1,880	483	17,179
1981	804	294	422	1,502	1,156	1,774	846	280	325	486	1,008	1,450	3,517	884	508	17,006
1982	817	301	478	1,978	1,278	2,642	924	394	490	519	860	1,600	3,684	2,637	746	21,626
1983	872	267	485	1,575	1,141	2,057	1,048	302	403	513	1,012	1,750	3,800	1,313	557	19,205
1984	922	352	434	2,005	1,088	2,241	812	486	431	557	970	1,900	3,776	1,799	584	20,701
1985	594	288	479	1,793	954	2,012	910	443	300	517	988	1,900	3,590	1,410	368	18,775
1986	1,078	362	386	1,867	1,253	2,020	986	629	445	470	829	1,860	3,565	2,180	637	21,098
1987	925	309	506	1,985	1,064	2,273	998	615	340	526	971	1,680	4,873	1,077	423	20,922
1988–9	970	328	501	1,924	1,131	2,443	1,042	624	383	534	828	1,950	4,142	2,467	518	22,555
1989–90[1]	1,050	337	468	1,848	959	1,902	1,045	474	417	559	757	1,800	4,520	1,727	546	21,215
1990–1[3]			460	1,916	950	2,014	1,069	493	333		621	1,900	4,296	1,958	500	

[1] Preliminary. [2] Commercial crop. [3] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.18

Salient Statistics of Apples[1] in the United States

Year	Production		Growers Prices		Utilization of Quantities Sold						Avg. Farm Price ¢ Per Lb.	Farm Value Million $	Foreign Trade[4]			Fresh Per Capita Consumption Lbs.
						Processed[5]							Domestic Exports		Imports	
	Total	Utilized	Fresh ¢ Lb.	Processing $ Ton	Fresh	Canned	Dried	Frozen	Juice & Cider	Other[3]			Fresh	Dried[5]	Fresh & Dried[5]	
	Millions of Pounds												Metric Tons			
1976	6,472	6,467	11.50	108.00	3,916	920	229	220	1,109	73	9.10	586.5	123.7	4.6	55.7	17.1
1977	6,740	6,710	13.80	122.00	3,860	1,076	226	161	1,267	121	10.60	708.6	142.4	8.2	63.6	16.5
1978	7,597	7,544	13.90	117.00	4,210	1,224	221	207	1,495	186	10.40	781.4	154.8	7.3	78.5	18.0
1979	8,126	8,101	15.40	114.00	4,289	1,337	256	137	1,954	130	10.90	881.2	237.3	5.5	71.2	17.2
1980	8,818	8,800	12.10	84.00	4,934	1,202	195	168	2,137	165	8.70	761.3	311.3	7.6	76.8	19.2
1981	7,740	7,693	15.40	102.00	4,442	1,002	190	173	1,798	87	11.10	851.1	269.2	8.3	128.3	17.2
1982	8,122	8,110	13.20	118.00	4,537	1,249	210	191	1,808	116	10.00	809.0	261.8	16.1	98.7	17.7
1983	8,379	8,358	14.80	104.00	4,621	1,204	283	170	1,985	95	10.50	879.0	228.7	12.0	126.0	18.4
1984	8,324	8,309	15.50	112.00	4,655	1,177	289	198	1,889	102	11.20	927.6	205.2	9.3	132.6	18.6
1985	7,915	7,827	17.30	103.00	4,222	1,255	242	194	1,839	74	11.70	914.3	147.1	5.5	152.6	17.5
1986	7,859	7,833	19.10	116.00	4,464	1,179	199	257	1,643	91	13.40	1,046.8	175.1	10.5	149.4	18.1
1987	10,742	10,451	12.70	79.30	5,610	1,306	284	249	2,929	74	8.60	903.1	296.2	7.7	132.7	21.2
1988	9,131	9,081	17.20	123.00	5,240	1,399	285	266	1,825	67	12.70	1,150.4	— 249.2 —		135	19.9
1989[2]	9,966	9,920	13.40	108.00	5,875	1,319	282	322	2,066	57	10.20	1,007	—333—		118	21.6
1990[6]	9,472															

[1] Commercial crop. [2] Preliminary. [3] Mostly crushed for vinegar, jam, etc. [4] Year beginning July. [5] Fresh weight basis. [6] Estimate.
Source: Statistical Reporting Service, U.S.D.A. T.19

U.S. Price of Apples Received by Growers (for Fresh Use) In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1979	13.5	13.9	14.1	13.9	13.9	13.0	16.2	14.9	14.9	13.3	14.2	14.3	14.2
1980	14.1	14.9	16.6	17.0	17.9	21.0	24.6	17.5	15.7	12.5	11.5	10.7	16.2
1981	10.7	12.4	12.1	11.3	10.7	10.5	12.7	14.6	16.0	16.0	16.1	15.7	13.2
1982	14.1	15.7	16.0	14.5	16.2	17.7	15.3	12.8	16.3	14.5	13.9	13.0	15.3
1983	11.0	12.2	12.0	11.3	11.9	11.1	12.0	16.0	15.9	14.9	14.6	14.0	13.2
1984	14.3	15.1	15.2	14.8	15.0	14.6	14.9	16.5	18.5	17.4	16.4	15.6	15.5
1985	14.0	14.3	15.7	15.1	14.1	13.1	12.6	12.1	16.4	15.4	16.4	16.6	17.3
1986	16.6	17.2	17.2	17.2	20.7	21.0	28.5	27.6	20.9	18.0	17.3	16.5	19.1
1987	18.3	19.0	18.0	19.1	22.4	24.6	25.5	15.2	14.8	12.1	11.4	10.4	12.7
1988	11.1	12.9	12.5	11.0	10.9	10.4	22.8	27.7	23.7	18.5	17.5	17.4	17.4
1989[1]	18.1	18.0	16.6	14.4	13.5	10.8	11.5	15.9	16.8	14.3	13.3	12.1	14.6
1990[1]	12.3	12.4	12.4	12.1	12.6	12.3	18.4	20.4	24.5	19.4			

[1] Preliminary. *Source: Economic Res. Service, U.S.D.A.* T.20

Arsenic

Because arsenic is produced as a byproduct of copper, lead, and gold mining, supply and demand for arsenic are not well balanced. World mine production was estimated to have increased to 56,000 tonnes in 1990 from 52,000 in 1989. World copper and lead reserves contain some 11 million tonnes of arsenic. In addition, many gold ores, particularly in Canada, contain substantial amounts of arsenic.

The U.S. imports all of its arsenic, primarily as arsenic trioxide, which is converted to arsenic acid. In 1990, the U.S. imported 28,000 tonnes of arsenic trioxide, along with 800 tonnes of arsenic metal and 42 tonnes of arsenic compounds.

About 70 percent of domestic arsenic use was in wood preservatives, 22 percent in agricultural chemicals (primarily herbicides and desiccants), 4 percent in glass, 2 percent in nonferrous alloys, and 2 percent in other uses. Metallic arsenic is primarily used in nonferrous alloys and in the manufacture of semiconductors. The total value of the arsenic metal and compounds consumed in the U.S. in 1990 was estimated at $17 million.

The average price of Mexican arsenic trioxide fell to 23 cents/lb. from 27 cents in 1989. Mexican producers faced competition from a new producer in Finland, who was expected to produce up to 5,000 tonnes a year of 99.5 percent pure arsenic trioxide. Furthermore, world arsenic trioxide stocks, while not known, were believed to be at historically high levels.

However, China stopped delivery of arsenic metal to lead alloyers in December 1989, causing the merchant price to rise from 60 cents/lb. to $1.50 in a week. In February 1990, prices were as high as $6.00, and there were many lawsuits over canceled contracts. But by October, Chinese shipments had resumed, and the dealer price had retreated to a range of 95-110 cents. For the year, the average price was $1.80, well above 47 cents in 1989.

World Production of White Arsenic (Arsenic Trioxide) In Metric Tons

Year	Belgium	Bolivia	Canada[4]	Chile	France	Japan	Mexico	Namibia[3]	Peru	Philippines	Portugal	Sweden	USSR	West Germany	World Total
1979				—	5,550	182	6,537	2,221	1,415	—		5,080	7,700	—	29,620
1980		81		—	5,300	284	6,932	1,288	2,475	—		6,500	7,700	360	31,199
1981	3,000	127	2,000	—	5,200	95	6,517	1,370	2,164	—		6,900	7,750	360	43,731
1982	3,000	261	2,000	—	6,000	100	4,740	1,895	1,910	—	200	9,000	7,800	360	45,572
1983	3,000	107	2,000	—	4,727	300	4,557	1,126	1,009	—	180	9,000	7,900	360	42,126
1984	3,000	144	3,000	3,500	3,828	500	5,496	2,504	1,090	—	180	10,000	8,000	360	48,402
1985	3,000	361	3,000	4,000	8,000	500	4,782	2,471	1,257	5,000	204	10,000	8,100	360	53,235
1986	3,000	241	3,000	4,000	10,000	500	5,315	2,208	1,273	5,000	176	10,000	8,100	360	53,173
1987	3,500	132	3,000	3,616	10,000	500	5,304	1,864	1,757	5,000	218	10,000	8,100	360	52,351
1988[1]	3,500	191	2,000	3,207	10,000	500	5,164	2,983	828	5,000	214	10,000	8,100	360	52,047
1989[2]	3,500	350	2,000	3,400	10,000	500	5,100	2,900	1,000	5,000	180	10,000	8,100	360	52,390
1990[2]	3,500		2,000	6,000	10,000		5,000	3,000	1,500	5,000		8,000	8,000		56,000

[1] Preliminary. [2] Estimate. [3] Output of Tsumeb Corp. Ltd. only. [4] Includes low-grade dusts that were exported to the U.S. for further refining. *Source: Bureau of Mines*

T.21

Salient Statistics of White Arsenic in the U.S. In Metric[5] Tons

	Imports For Consumption										Imports of Arsenic Trioxide from						
Year	Trioxide (As_2O_3)	Metallic Arsenic	Arsenic Acid	Sulfide	Arsenic Compounds	Trioxide Mexican 99.13% As_2O_3 ¢ lb.[3]	Value of Imports Thous. $	Trioxide Domestic[4] 95% As_2O_3 — ¢ lb.	Metal Domestic 99% As 12/31 —	Consumption ths. tonnes	Canada	France	Mexico	South Africa	Sweden	Bel-Lux.	Exports (compounds) Gross Weight
1979	12,325	405	176	39	1	30	7,728	24¼	190	477	277	3,242	3,125	—	5,014	184	969
1980	12,528	266	271	11	1	46	9,190	31¾	300	—	486	2,780	3,720		4,770	388	1,518
1981[5]	17,199	294	1,511	—	4	78	17,742	40	275	50	5,581	749	3,566	17	4,902	1,251	523
1982	14,599	136	699	18	362	59	18,205	40	245	16.2	3,352	1,992	2,276	—	4,192	1,030	2,658
1983	10,186	243	2,385	1,127	26	45	13,920	33	225	13.6	2,525	667	2,531	17	3,430	946	85
1984	13,985	304	2,506	20	35	42	14,581	33	210	17.3	4,767	1,261	3,115	—	3,914	843	76
1985	16,472	407	1,993	2	23	42	17,999	33	210	18.1	3,669	3,608	3,399	113	2,996	1,498	158
1986	25,728	395	1,381	16	10	44	20,851	33	185	21.1	1,924	6,274	4,408	1,210	7,069	1,255	217
1987	26,843	631	1,054	15	—	36	21,383	N.A.	249	21.9	2,012	5,341	4,457	1,380	4,824	1,643	167
1988[2]	28,056	600	188	27	—	33	19,739	N.A.	271	22.4	2,068	6,909	4,187	1,017	3,664	1,563	400
1989[1]	28,348	928	48	2		27	16,000			22.3	1,771	7,059	4,008	94	5,676	1,425	126
1990[1]		800				23				21.9							190

[1] Estimate. [2] Preliminary. [3] F.O.B. Laredo, TX. [4] F.O.B. Tacoma, Wash. [5] Data prior to 1981 are in short tons. *Source: Bureau of Mines*

T.22

Barley

World barley production in 1990/91 was forecast to rise by 6 percent to 179 million tonnes. In the USSR, the largest producer, output was 57 million tonnes, up 18 percent. Canada's crop increased by 15 percent to 13.2 million. EC production fell by 1 percent to 45.9 million tonnes, and Eastern Europe's output was 18.9 million, down slightly.

Trade in barley has been fairly stagnant over the last few years. World exports in 1990/91 were due to rise by 5 percent to 16.2 million tonnes. Shipments by the EC, the leading exporter, were pegged at 7 million tonnes. Canada was forecast to ship 4 million tonnes, while Australian exports were put at 1.2 million and U.S. shipments at 2 million.

Saudi Arabia remained the largest importer of barley, with 1990/91 purchases projected at 4 million tonnes. The USSR was expected to import 2.5 million tonnes, down from 4 million in 1989/90, and Japan and Eastern Europe were importers.

World utilization of barley has increased in recent years and was put at 177 million tonnes in 1990/91, 2 percent more than the year before. Soviet consumption was expected to rise by 9 percent to over 57 million tonnes. EC usage was forecast at almost 40 million tonnes, while Eastern European countries were to use 17 million tonnes.

Global ending stocks of barley were projected to be 27 million tonnes, up 8 percent from the previous season. The U.S. was expected to hold about 12 percent of those stocks.

U.S. barley production in 1990/91 expanded by 4 percent to 419 million bushels. Excellent weather boosted yields, and average yield rose to 55 bushels per acre from 49 the previous year. The major producing state was North Dakota with a crop of 132 million bushels, followed by Idaho and Montana. Acreage planted nationwide was 8.3 million, and 7.6 million acres were harvested.

Barley stocks at season's beginning were 161 million bushels, down 18 percent from the previous year. With the crop and small imports of 15 million bushels, the total supply was 595 million. Utilization of barley was expected to be unchanged. Use for feeding was slated to fall to 175 million bushels from 184 million. Food, seed, and industrial use was put at 185 million bushels, versus the previous year's 180 million. Exports were forecast at 85 million bushels, about the same as the season before, and a major export market was Saudi Arabia.

U.S. ending stocks were projected to fall by 7 percent to 150 million bushels. Stocks have declined since 1986/87, when they were 336 million bushels.

U.S. Government Program

The target price for barley in 1991 is $2.36/bu., unchanged from 1990, and the loan rate is $1.32, up from $1.28 in 1990. The acreage set-aside in 1991 is 7.5 percent, versus 10 percent in 1990.

Futures Markets

Feed barley futures are traded on the Winnipeg Grain Exchange.

World Barley Supply and Demand In Millions of Metric Tons

	Exports						Imports			Utilization				Stocks[2]		
Crop Year	Australia	Canada	EC-12	Total Non-U.S.	U.S.	Total Exports	Saudi Arabia	Total Imports	Production	U.S.S.R.	Non-U.S.	U.S.	Total Utilization	Non-U.S.	U.S.	Total Stocks
1984–85	4.7	2.4	7.6	16.8	1.2	18.0	4.7	18.0	175.5	45.2	157.8	10.3	168.1	19.1	5.4	24.4
1985–86	3.7	4.8	7.3	17.6	.8	18.4	6.6	18.4	178.0	48.6	161.8	10.9	172.7	22.6	7.1	29.7
1986–87	2.2	6.0	6.2	15.6	3.0	18.6	9.0	18.6	182.4	56.6	167.8	10.3	178.1	26.7	7.3	34.0
1987–88	1.6	3.5	7.0	13.2	2.9	16.1	4.8	16.1	181.2	60.9	173.7	9.3	183.0	25.2	7.0	32.2
1988–89	1.4	3.4	9.0	15.2	1.7	16.9	4.6	16.9	167.8	48.2	162.9	7.5	170.4	25.3	4.3	29.6
1989–90[1]	2.5	3.8	6.6	13.5	2.0	15.5	3.6	15.5	169.5	52.5	166.3	7.9	174.3	21.4	3.5	24.9
1990–1[3]	1.2	4.0	7.0	14.2	2.0	16.2	4.0	16.2	180.9	58.1	170.7	7.8	178.6	24.0	3.3	27.2

[1] Preliminary. [2] End of crop year season. [3] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T 29A

World Production of Barley In Thousands of Metric Tons

Crop Years	China	United States	Australia	Canada	Rep. of Korea	Denmark	Morocco	France	India	Japan	USSR	West Germany	Spain	Turkey	United Kingdom	World Total
1984–5	7,300	13,046	5,554	10,279	804	6,072	1,405	11,699	1,834	396	41,800	10,284	10,000	6,000	11,055	175,500
1985–6	6,200	12,876	4,868	12,387	571	5,251	2,225	11,470	1,556	378	46,500	9,690	9,980	5,800	9,740	178,000
1986–7	5,632	13,293	3,611	14,634	453	5,134	3,563	9,950	1,962	344	53,900	9,377	7,431	6,300	10,015	182.428
1987–8	6,041	11,354	3,477	13,957	516	4,292	1,543	10,528	1,669	353	58,400	8,571	9,282	6,000	9,230	181,200
1988–9	6,200	6,325	3,306	10,212	561	5,419	3,501	9,915	1,593	399	44,500	9,587	12,070	7,000	8,775	167,800
1989–90[1]	5,700	8,800	4,095	11,666							48,500			4,900		169,500
1990–1[2]	5,700	9,121	3,870	13,500							57,000			6,000		180,900

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T 23

BARLEY

U.S. Barley Acreage and Prices

Year Beginning June 1	Acreage (Million Acres)				Yield per Harvested Acre In Bushels	Seasonal Prices				Govt. Price Support Operations			
	National Program	Set-aside	Planted	Harvested for Grain		Received by Farmers[1]	Minneapolis[2] or Better Feed (No. 2)	Minneapolis[2] or Better Malting (No. 3)	Portland No. 2 Western	National Avg. Loan Rate	Target Price	Put Under Support (Mil. Bu.)	Total Payments to Participants[6] (Mil. $)
						Dollars per Bushel							
1982–3	—	.4	9.5	9.0	57.2	2.18	1.76	2.53	2.52	2.08	2.60	92.6	60[10]
1983–4	—	1.1	10.4	9.7	52.3	2.47	2.48	2.84	2.91	2.16	2.60	32.4	72[3]
1984–5	—	.5	12.0	11.2	53.4	2.29	2.09	2.55	2.59	2.08	2.60	57.0	50[10]
1985–6	—	.7	13.2	11.6	51.0	1.98	1.53	2.24	2.23	2.08	2.60	159.3	159[10]
1986–7	—	1.8	13.1	12.0	50.8	1.61	1.44	1.89	1.97	1.56	2.60	164.7	351[3]
1987–8	—	2.9	11.0	10.0	52.4	1.81	1.78	2.04	2.09	1.49	2.60	122.7	337[3]
1988–9		2.8	9.8	7.6	38.0	2.80	2.31	4.11	2.74	1.44	2.51	22.0	164[9]
1989–90[4]	—	2.3	9.2	8.3	48.6	2.42	2.21	3.20	2.64	1.34	2.43		70[9]
1990–1[5]	—	2.4	8.2	7.6	55.2	2.45				1.32	2.36		

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[1] Excludes support payments. [2] Duluth beginning March 1987. [3] Deficiency & diversion payments. [4] Preliminary. [5] Estimate. [6] Available for total feed grains only. [7] Disaster payments. [8] Deficiency & disaster payments. [9] Deficiency, disaster & diversion payments. [10] Deficiency payments. *Source: Economic Research Service, U.S.D.A.* T.24

Salient Statistics of Barley in the United States In Millions of Bushels

Year Begin. June 1	Supply				Disappearance							Ending Stocks		
					Domestic Use									
	Beginning Stocks	Production	Imports	Total Supply	Food	Alc. Beverages	Seed	Feed & Residual	Total	Exports	Total Disapp.	Gov't. Owned[1]	Privately Owned[2]	Total Stocks
1982–3	147.8	515.9	8.4	672.1	7.2	145.5	17.2	241.3	411.2	44.2	455.4	6.0	210.7	216.7
1983–4	216.7	508.3	5.0	730.0	7.0	142.5	19.5	280.3	451.9	88.7	540.6	11.9	177.5	189.4
1984–5	189.4	598.0	7.5	794.9	—149.0—		21.4	305.5	475.9	71.6	547.5	15.6	231.8	247.4
1985–6	247.4	590.2	6.2	843.8	—147.2—		21.3	328.3	496.8	19.8	516.6	57.4	269.8	327.2
1986–7	327.2	608.5	6.6	942.3	—156.1—		17.9	298.4	472[illegible]	133.6	606.0	75.[illegible]	260.8	336.3
1987–8	336.3	521.5	11.3	869.1	—158.3—		15.7	253.1	427.1	120.9	548.0	50.1	271.0	321.1
1988–9	321.1	290.0	10.5	621.6	—164.7—		15.0	166.2	345.9	79.3	425.2	30.4	166.0	196.4
1989–0[3]	196.4	404.2	14.2	614.8	—165.4—		14.4	185.2	365.0	89.0	453.9	19.0	141.8	160.8
1990–1[4]	160.8	418.9	15.0	594.7	—185.0—			175.0	360.0	85.0	445.0			150.0

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[1] Uncommitted inventory. [2] Includes quantity under loan & farmer-owned reserve. [3] Preliminary. [4] Estimate.
Source: Economic Research Service, U.S.D.A. T.29

High, Low & Closing Prices of May Barley Futures at Winnipeg In Canadian Dollars per Tonne

Year of Delivery	Year Prior to Delivery							Delivery Year					Life of Delivery Range
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1985 High	136.00	138.50	137.00	134.30	135.20	138.80	139.10	138.10	137.80	138.20	142.00	149.00	149.00
Low	130.10	124.30	129.80	129.70	132.20	133.80	136.50	136.20	130.40	134.00	138.20	128.50	124.30
Close	131.50	137.50	130.10	134.20	134.20	138.10	137.10	137.80	134.80	138.00	142.00	129.60	—
1986 High	—	131.10	120.40	117.00	116.90	116.20	115.60	114.40	105.40	102.60	102.30	116.00	131.10
Low	—	121.90	113.70	111.10	113.00	114.50	112.60	104.50	100.40	98.70	84.60	87.80	84.60
Close	—	122.00	114.10	113.70	115.70	115.45	113.60	104.90	100.90	102.20	92.80	115.10	—
1987 High	—	86.50	85.50	89.90	88.20	87.40	85.40	85.50	83.40	80.30	79.50	86.50	89.90
Low	—	85.30	83.50	83.20	83.20	82.70	84.00	83.00	77.20	76.50	74.00	76.00	74.00
Close	—	85.30	83.60	88.90	84.00	85.10	84.40	83.50	78.30	78.30	76.30	78.10	—
1988 High	87.30	82.00	74.70	74.30	72.60	76.00	74.90	78.50	76.80	73.70	78.00	101.40	101.40
Low	77.10	73.20	72.50	72.30	70.50	69.00	71.20	72.80	73.10	69.50	74.50	76.10	69.00
Close	83.00	75.20	72.50	72.40	70.60	74.60	74.30	73.40	74.20	73.70	78.00	98.50	—
1989 High	135.10	140.00	138.20	145.50	142.40	139.50	139.10	139.50	129.40	127.30	120.00	118.00	145.50
Low	111.00	120.00	129.80	138.00	135.00	129.70	131.40	127.90	120.90	119.30	101.00	104.90	101.00
Close	130.00	130.30	138.20	139.20	138.70	132.00	138.10	129.10	125.00	119.60	104.00	117.80	—
1990 High	—	—	—	116.80	115.80	120.20	120.80	120.70	117.70	113.30	111.20	115.30	120.80
Low	—	—	—	109.60	112.40	113.90	118.60	116.20	110.80	107.80	103.00	105.10	103.00
Close	—	—	—	109.60	114.70	120.00	119.20	117.20	111.80	108.50	104.50	113.00	—
1991 High	—	—	—	99.00	102.00	101.00	94.90						
Low	—	—	—	94.00	96.80	95.50	90.40						
Close	—	—	—	98.00	100.90	96.00	92.80						

Source: Winnipeg Commodity Exchange T.26

Average Cash Price of No. 2 (or better) Feed Barley, in Duluth[2] In Cents Per Bushel

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
1983–4	196	195	242	261	260	253	239	255	256	265	274	277	248
1984–5	259	218	213	205	210	206	188	198	199	197	205	205	209
1985–6	190	166	146	140	141	149	160	157	—	—	—	131	153
1986–7	123	116	113	127	150	163	123	—	—	164[2]	176	186	144
1987–8	173	159	160	176	178	182	174	172	177	188	194	198	178
1988–9	241	228	208	224	232	227	214	224	233	249	252	241	231
1989–90	212	222	217	214	216	215	223	228	222	227	227	233	221
1990–1[1]	239	217	199	201	211	216	207						

[1] Preliminary. [2] Prior to March 1987 prices are at Minneapolis. *Source: Economic Research Service, U.S.D.A.*

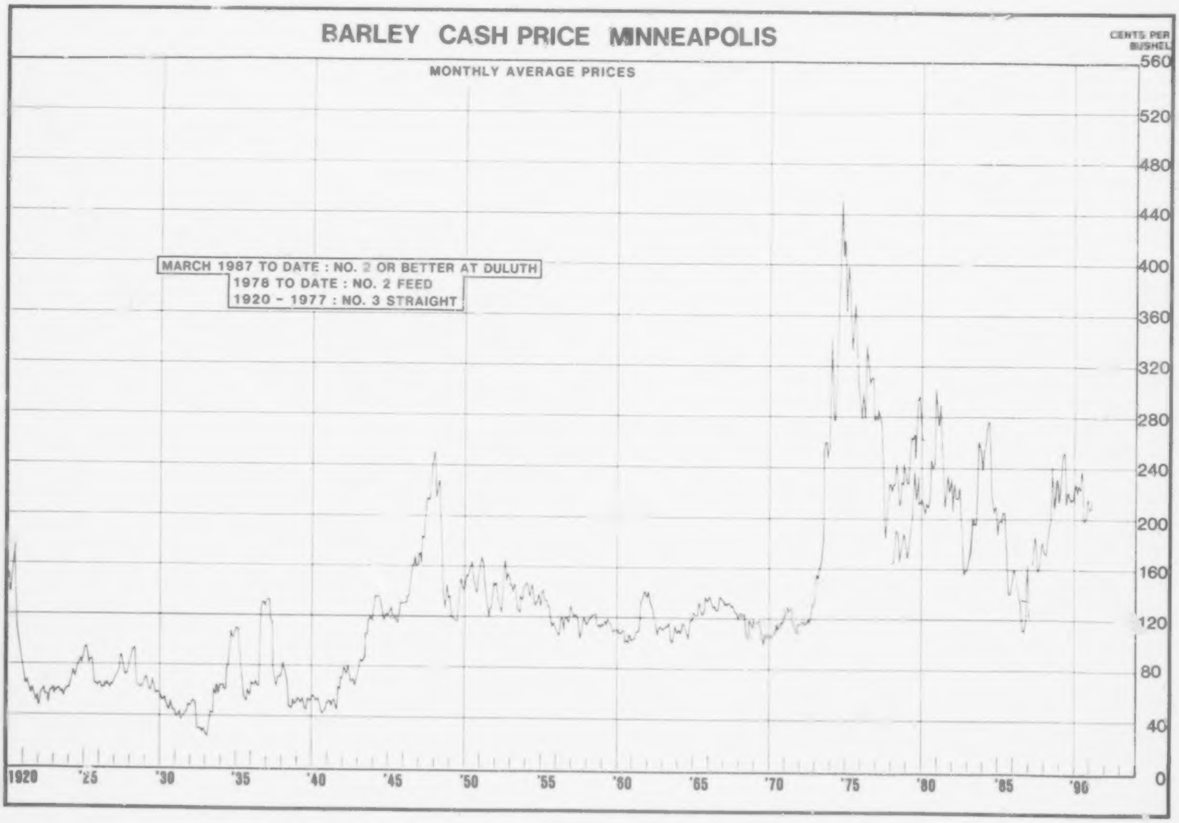
T.27

Average Open Interest of Barley Futures at Winnipeg In Contracts (20 Tonne)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	8,675	10,760	9,142	10,267	10,739	12,743	11,852	16,199	18,696	17,109	16,823	12,768
1984	10,319	10,783	10,001	11,628	11,068	11,178	13,749	13,513	13,679	11,307	10,108	10,323
1985	9,946	11,547	10,180	9,499	8,259	8,796	9,214	9,539	9,660	9,736	9,966	8,205
1986	7,671	8,142	9,041	9,485	9,105	8,194	8,365	8,744	8,886	8,918	8,408	8,938
1987	8,034	8,489	8,270	9,427	10,532	11,553	9,927	9,089	10,095	12,628	13,077	12,289
1988	15,297	20,531	21,466	25,212	24,200	30,207	34,346	33,886	32,925	29,227	24,615	21,282
1989	20,949	18,756	14,592	13,237	12,382	9,744	8,276	10,366	14,411	13,495	12,181	10,875
1990	9,926	10,320	10,040	9,815	10,877	11,165	11,190	10,483	11,152	10,572	8,968	7,164
1991	7,005											

Source: Winnipeg Commodity Exchange

T.28



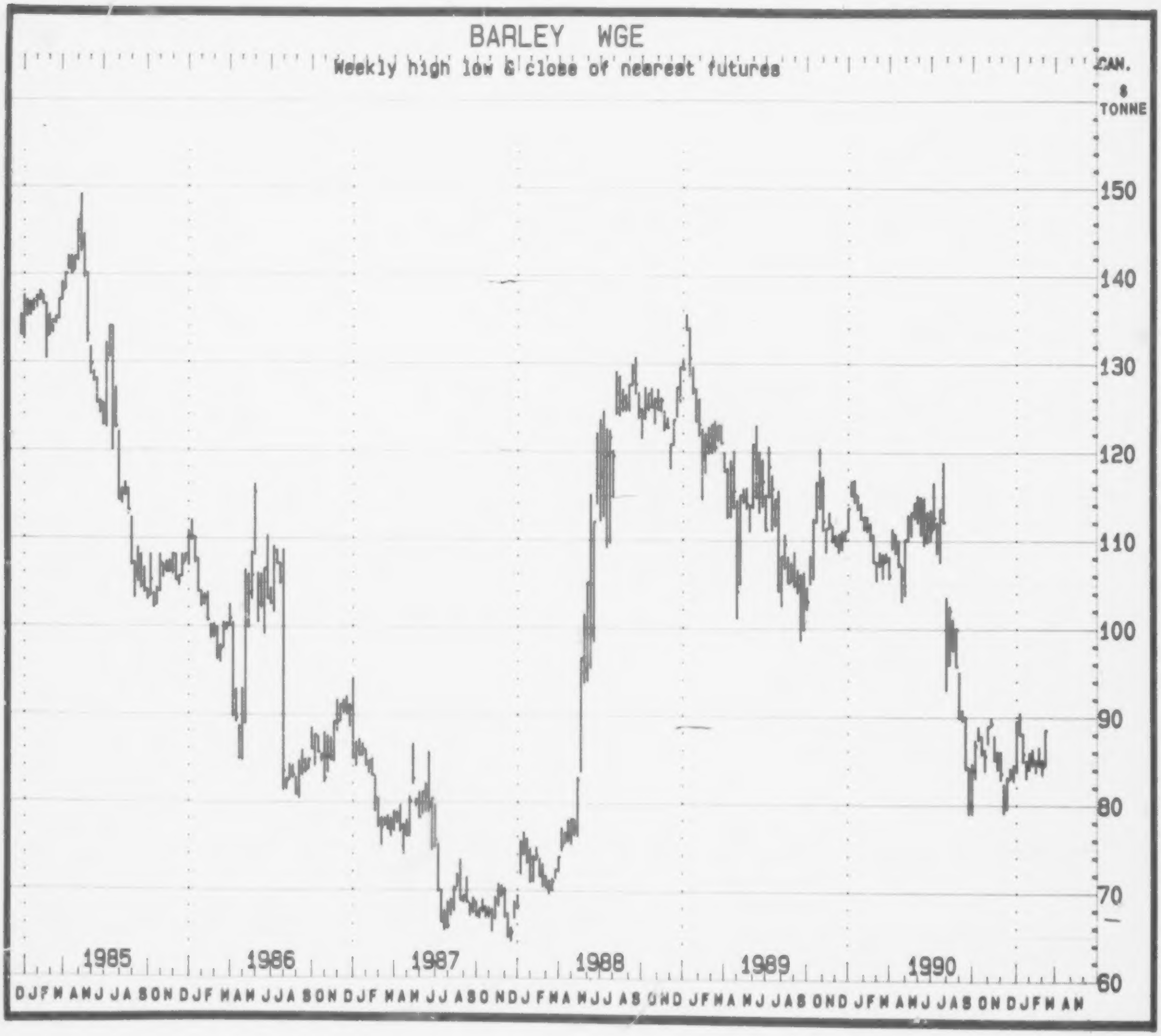
BARLEY

Production of Barley in the United States, by States In Millions of Bushels

Year	Ari-zona	Cali-fornia	Colo-rado	Ida-ho	Kan-sas	Minne-sota	Mary-land	Okla-homa	Montana	North Dakota	Oregon	Pennsyl-vania	Utah	South Dakota	Wash-ington	Wyo-ming
1980	4.5	44.1	15.9	59.0	2.1	34.6	3.4	1.7	44.1	48.0	10.1	3.8	10.8	15.2	32.3	8.6
1981	4.1	40.3	18.6	63.1	1.7	57.7	5.0	1.6	56.8	105.6	11.7	4.1	11.1	20.1	44.1	9.0
1982	3.8	38.4	15.9	75.9	2.5	51.0	5.4	1.1	76.4	103.4	15.5	3.4	12.9	23.4	49.4	9.4
1983	2.8	29.4	16.5	67.0	4.6	43.5	5.0	1.5	77.7	114.7	16.5	3.6	11.4	23.1	54.4	10.0
1984	5.4	29.0	20.2	88.4	6.7	61.8	5.5	2.1	59.1	153.7	17.4	3.6	11.6	30.3	63.7	10.4
1985	6.0	24.8	21.8	71.9	9.7	71.0	5.5	1.9	30.0	184.3	19.3	4.3	11.8	32.4	56.6	10.6
1986	2.9	23.6	21.0	72.2	10.4	55.0	4.9	1.3	85.0	176.0	20.8	3.9	11.6	35.9	45.0	10.9
1987	2.2	17.8	14.1	61.5	4.8	49.6	5.0	.8	94.5	139.2	14.0	3.4	11.8	34.0	35.5	9.1
1988	1.4	17.1	11.7	51.0	3.0	27.2	4.8	.8	30.0	45.2	14.8	3.6	9.6	8.1	34.7	6.7
1989	1.2	14.5	12.2	59.5	.6	44.0	4.0	.8	68.8	98.1	12.1	5.0	9.0	19.3	28.4	7.0
1990[1]	1.6	10.0	11.3	56.2	.9	50.4	4.3	.7	55.7	132.5	8.8	4.1	8.6	24.5	21.8	9.3

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.*

T.25



Bauxite

Tied to the market for aluminum, which suffered a downturn, the domestic bauxite picture darkened in 1990. In response to rising costs, the Aluminum Co. of America (Alcoa) announced the closure of its bauxite mining operations in Arkansas. The permanent shutdown was expected to have a strong impact on future domestic production. However, the actual production figures aren't released, because the government considers them proprietary.

Imports in the first eight months of 1990 ran at a faster pace than in 1989. Refractory grade calcinated bauxite imports in January to August of 1990 totaled 176,000 tonnes, versus 254,000 tonnes in full-year 1989. U.S. imports of other grades of calcinated bauxite in the first eight months totaled 635,000 tonnes, compared with 505,000 for all of 1989.

Brazil was the leading supplier of bauxite to the U.S. in the first eight months of 1990, providing 288,000 tonnes of other grade bauxite, compared with China's 127,000 tonnes. However, China maintained its leading position in refractory grade bauxite, supplying the U.S. with 79,000 tonnes, while Brazil sent none.

In January to August 1990, the U.S. imported 7.74 million tonnes of crude and dried bauxite, compared with full-year 1989's 10.66 million tonnes. In 1989, Guinea was the major U.S. supplier with 3.39 million tonnes, followed by Jamaica, which provided 3.33 million. During the first eight months of 1990, Jamaica supplied 2.65 million tonnes of crude bauxite, followed by Guinea with 2.29 million.

Australia was the major shipper of alumina to the U.S. in 1989, sending 3.60 million tonnes across the Pacific to provide the bulk of the 4.31 million tonnes imported during the year. For the first eight months of 1990, U.S. imports of alumina totaled 2.84 million tonnes, with Australia maintaining its position as dominant supplier with 2.44 million.

The U.S. exports some alumina, mostly to Canada and Mexico. Final 1989 totals showed U.S. exports of alumina to be 1.32 million tonnes, with Canada taking 942,000 tonnes and Mexico 150,000. In the first eight months of 1990, Canada was the destination for 495,000 tonnes and Mexico for 119,000 tonnes. U.S. alumina exports were 912,000 tonnes in the first eight months.

World Production of Bauxite In Thousands of Metric Tons

Year	Australia	Brazil	China	France	Greece	Guinea	Guyana[2]	Hungary	Indonesia	Jamaica[3]	India	Suriname	USSR[3]	U.S.[3]	Yugoslavia	World Total
1980	27,179	5,538	1,500	1,921	3,286	11,862	1,844	2,950	1,249	12,054	1,785	4,646	4,600	1,559	3,138	89,220
1981	25,441	5,770	1,500	1,827	3,216	11,112	1,681	2,914	1,203	11,682	1,923	4,006	4,600	1,510	3,249	85,347
1982	23,625	6,289	1,500	1,662	2,853	11,827	1,783	2,627	700	8,378	1,854	4,205	4,600	732	3,668	79,335
1983	24,372	7,199	1,600	[illegible]	2,455	12,421	1,087	2,917	778	7,683	1,976	3,400	4,600	679	3,500	78,687
1984	31,537	6,433	1,600	1,607	2,296	13,160	1,333	2,994	1,003	8,937	2,093	3,454	4,600	856	3,347	87,799
1985	31,839	5,846	1,650	1,530	2,453	11,790	1,675	2,815	[illegible]	6,239	2,281	3,738	4,600	674	3,538	84,189
1986	32,384	6,544	1,650	1,379	2,230	13,300	2,074	3,022	650	6,944	2,322	3,731	4,600	510	3,459	87,751
1987	34,102	6,567	2,400	1,271	2,472	13,500	2,785	3,101	635	7,660	2,736	2,522	4,600	576	3,394	91,724
1988[1]	36,192	7,728	3,500	878	2,400	15,600	1,774	2,593	513	7,408	3,961	3,434	4,600	588	3,034	97,946
1989[2]	38,583	8,500	4,000	800	2,400	16,523	1,281	2,700	862	9,395	4,768	3,530	4,600	N.A.	3,252	105,029
1990[2]	39,600	7,900			2,500	17,500	1,300	2,600		10,900	4,300	3,500	4,600		3,100	107,000

[1] Preliminary. [2] Estimate. [3] Dry Bauxite equivalent of ore processed. *Source: Bureau of Mines* T.30

U.S. Salient Statistics of Bauxite In Thousands of Metric Tons

Year	Net Import Reliance as a % of Apparent Consumption	Av. Price F.O.B. Mine $ per Ton	Mine Production			Recovery[1] of Processed Bauxite			Dry Equivalent			Stocks, Dec. 31			
			Crude	Dried Equivalent	Value ($1,000)	Crude Ore Treated	Recovered[1] Total	Recovered[1] Dried Equiv.	Imports[2] (for Consumption)	Exports[2]	Consumption	Producers & Processors	Consumers	Govt.	Total
1980	94	6–16	1,869	1,559	22,353	355	179	277	14,087	21	15,962	662	7,681	14,661	23,004
1981	94	8–20	1,847	1,510	26,489	419	187	328	12,802	20	13,525	897	7,395	14,661	22,953
1982	96	8–20	896	732	12,334	234	120	184	10,122	49	9,217	614	6,548	16,326	23,488
1983	96	13–20	826	679	11,309	293	140	225	7,601	74	9,100	552	5,061	16,326	21,939
1984	96	13–20	1,054	856	15,643	361	168	294	9,435	82	10,519	499	4,382	17,338	22,219
1985	96	13–20	787	674	12,855	330	166	284	7,158	56	8,206	220	3,423	18,357	22,000
1986	96	13–17	617	510	10,361	250	128	196	6,456	69	6,901	186	3,133	18,472	21,791
1987	96	13–17	689	576	10,916	131	62	102	9,156	201	9,548	183	2,836	18,472	21,491
1988[3]	97	13–17	714	588	10,566	N.A.			9,944	63	[illegible]	3,021		18,474	21,495
1989[4]	96	15–20	N.A.	N.A.					10,666	44	11,805	2,891		18,474	21,365
1990[4]	98	15–20							13,500	75	12,000	3,000			

[1] Calcined, or sintered. [2] Including concentrates. [3] Preliminary. [4] Estimate. *Source: Bureau of Mines* T.31

Bismuth

Bismuth is one of the active ingredients in many stomach remedies, and one of the best-selling remedies uses "bis" as part of its name. It may only be a coincidence that Mexico is the second largest exporter of bismuth metal to the U.S.

In 1990, domestic bismuth demand held steady against 1989's reduced usage. By the end of the third quarter, year-to-date disappearance was 1.01 million kg., compared with 1989's full-year total of 1.35 million kg. Implied full-year offtake in 1990 was 1.34 million kg.

U.S. imports for consumption through the first eight months of 1990 were 1.37 million kg., compared with 1.88 million in full-year 1989. Belgium maintained its position as the leading bismuth supplier, with 40 percent of the total. Mexico was second with 23 percent.

Bismuth consumption breaks down into five areas: chemicals, which include pharmaceuticals; metallurgical additives; fusible alloys; other alloys; and all others, a category that includes experimental bismuth usage. Chemical usage of bismuth, including that used for pigments and compounds, as well as pharmaceuticals, represented 48 percent of total offtake. Thirty percent of total demand came from the steel industry, where bismuth is used in the production of free-machining steel.

Following 1989's bull market, when bismuth prices reached a high of $6.85 a pound, values declined sharply and ended 1990 at $2.80-$2.90. Slack demand for metals and bismuth destocking by the U.S. Defense Logistics Agency (DLA) kept the market under pressure. The DLA can auction 29,484 kg. of bismuth each month until late 1991.

According to the Bureau of Mines, an organic bismuth compound was developed in 1989 that makes plastics detectable to X-rays. Plastic explosives and weapons containing the additive are detectable in airport security systems.

Bismuth is a byproduct of the processing of lead and copper ores. Only in Bolivia is it mined as a principal product. Mexico is the leading producer of bismuth ore and refined metal.

In the U.S., bismuth consumption is centered in the northern and eastern industrial belts. In 1989, 51 companies east of the Mississippi River accounted for 92 percent of domestic bismuth consumption.

World Mine Production of Bismuth In Metric Tons[3]

Year	Australia (concentrates)	Belgium (Metal)	Bolivia (concentrates)	Canada (Metal)	China (Ore)	France (Ore)	Japan (Metal)	Mexico (Metal)	Peru (Metal)	Romania (Ore)	South Korea (Metal)	Un. Kingdom (Metal)	USSR (Metal)	West Germany (Metal)	Yugoslavia (Metal)	World Total (Metal)
1980	2,650		24	377	570	N.A.	745	1,698	1,096	180	271		160	0	183	7,954
1981	2,600		24	370	570	N.A.	1,054	1,446	1,409	180	220		170	0	225	8,268
1982	3,310		11	417	570	N.A.	1,071	1,336	1,676	180	209		170	0	108	9,058
1983	3,110		13	445	570	N.A.	1,263	1,202	1,495	180	220		180	—	99	8,777
1984	2,980	850	7	366	570	N.A.	1,241	955	1,433	180	278	330	180	—	66	7,028
1985[3]	1,400	610	159	180	260	70	642	925	738	80	135	150	83	400	68	4,325
1986	1,000	1,000	43	212	260	95	640	749	569	80	136	150	84	400	21	4,367
1987	350	865	1	218	260	90	546	1,012	387	75	145	180	85	400	73	4,290
1988[1]	400	795	13	225	275	90	524	958	310	65	140	135	85	—	23	3,567
1989[2]	400	750	20	272	275	90	500	1,000	290	60	140	150	85	—	28	3,595
1990[2]	450		30	290	300		475	950	320		130		80			3,650

[1] Preliminary. [2] Estimate. [3] Data prior to 1985 are in thousands of pounds *Source: Bureau of Mines* T.35

U.S. Salient Statistics of Bismuth In Metric Tons[4]

	World[6] Production		Bismuth Consumed, By Uses								Imports of Metallic Bismuth from				Dealer Price
Year	Mines[5]	Refined	Metallurgical Additives	Other Alloys	Fusible Alloys	Chemicals[3]	Other Uses	Total Consumption	Consumer Stocks Dec. 31	Exports of Metal & Alloys	Peru	Mexico	Belgium	Total	$ Per Pound
1980			467.9	26.5	650.9	1,115.6	26.7	2,288.8	674.0	128.7	619.1	860.4		2,217.4	2.64
1981			307.0	26.0	657.0	1,387.6	15.0	2,392.7	509.0	78.7	859.3	724.1		2,436.2	2.32
1982			124.6	21.4	571.6	1,144.8	13.6	1,876.4	541.6	52.8	864.1	699.5		2,026.2	1.61
1983			522.8	20.0	622.8	1,103.7	13.0	2,285.3	577.5	306.1	653.7	706.6		1,972.0	1.72
1984			424.5	20.0	608.8	1,573.0	22.0	2,648.4	480.0	311.5	391.8	430.5		1,948.4	4.27
1985[4]	4,407	4,325	303	10	277	601	9	1,199	230	122	78.6	307.6	209.0	907	5.18
1986	3,457	4,367	350	13	290	663	8	1,324	346	42	107.0	362.9	384.4	1,129	3.25
1987	2,886	4,290	494	11	334	748	10	1,597	294	38	440.4	391.3	435.0	1,581	3.65
1988[1]	2,767	3,567	493	12	332	679	15	1,531	433	147	188.9	448.5	340.2	1,641	5.78
1989[2]	2,762	3,595	396	11	272	659	14	1,352	440	122	271.4	390.8	835.7	1,880	5.76
1990[2]	2,830	3,650						1,400	460	150				2,000	3.50

[1] Preliminary. [2] Estimate. [3] Includes pharmaceuticals. [4] Data prior to 1985 are in thousands of pounds. [5] Metal content. [6] Excludes United States. *Source: Bureau of Mines* T.36

Broilers

U.S. broiler production increased by over 6 percent in 1990 and reached 18.4 billion pounds, as producers continued to receive positive returns. Higher production weighed on the market, but record exports and relatively high prices for red meat limited price declines. For the year, the 12-city price for broilers was 54-55 cents per pound, compared with 59 cents in 1989. Net returns were 8-9 cents per pound, slightly below the 1989 level.

Per capita U.S. broiler consumption continued to rise, reaching nearly 70 pounds in 1990.

U.S. broiler exports jumped by 35 percent in 1990 and approached a record 1 billion pounds. The major reason for the sharp increase was a surge in demand from the Soviet Union, which became the leading export market for U.S. broilers. Japan was the second largest market in 1990.

Futures Market

The CFTC approved a broiler futures contract to begin trading on February 7, 1991 at the Chicago Mercantile Exchange. The contract specifications call for a trading unit of 40,000 pounds of broiler chickens, and the contract has a cash settlement based on USDA's 12-city average price.

Broiler Supply and Prices in the United States

	Federally Inspected Slaughter						Prices (Cents/Lb.)	
Year & Quarters	Number (Mil.)	Avg. Wt. (Lbs.)	Liveweight Pounds (Mil. Lbs.)	Certified RTC Wt. (Mil. Lbs.)	Total Production RTC[2] (Mil. Lbs.)	Per Capita Consumption (Lbs.)	Farm	City[3]
1986	4,643	4.24	19,676	14,266	14,316	56.7	34.5	57.0
1987	4,971	4.29	21,333	15,502	15,594	60.2	28.3	47.4
1988	5,159	4.30	22,208	16,124	16,180	62.5	34.0	56.2
1989[1]	5,499	4.34	23,882	17,334	17,428	66.8	36.0	59.0
1989[1] I	1,310	4.35	5,698	4,129	4,150	16.1	36.0	59.5
II	1,394	4.33	6,032	4,389	4,413	16.9	42.0	67.3
III	1,412	4.29	6,052	4,395	4,420	17.0	36.8	59.6
IV	1,383	4.41	6,101	4,420	4,445	16.8	29.4	49.8
1990[1] I	1,412	4.39	6,201	4,495	4,521	17.0	33.5	56.5
II	1,470	4.36	6,416	4,657	4,685	17.5	34.2	56.6
III	1,479	4.29	6,346	4,613	4,658	17.6	35.1	57.2
IV							28.7	48.8

[1] Preliminary. [2] Total production equals fed. inspec. slaughter plus other slaughter minus cut-up & further processing condemnation. [3] 12-city weighted average. *Source: Economic Research Service, U.S.D.A.* T.38

Salient Broiler Statistics in the United States

	Commercial[2] Production		Average			Total Chickens[2] Supply & Distribution							
						Slaughter (In Millions of Pounds)						Consumption	
Year	Number (Millions)	Live weight (Mil. Lbs.)	Live weight Per Bird (Lb.)	Farm Price (¢ Lb.)	Gross Income (Mil. $)	Commercial Broilers	Other Chickens	Total	Storage Stocks Jan. 1	Export & Shipments	Broiler-Feed Ratio in Lbs.	Total	Per Capita (in Lbs.)
1984	4,282	17,863	4.17	33.7	6,018	13,016	672	13,688	135	580	2.9	13,083	55.2
1985	4,479	18,851	4.20	30.1	5,680	13,762	636	14,397	139	582	3.0	13,784	57.6
1986	4,646	19,651	4.24	34.5	6,780	14,316	627	14,943	171	734	3.7	14,192	58.7
1987	5,003	21,520	4.29	28.3	6,176	15,594	639	16,233	187	920	3.2	15,287	62.7
1988[1]	5,236	22,455	4.30	34.0	7,432	16,180	638	16,818	213	949	3.1	15,889	64.6
1989[3]	5,500	22,800	4.34	36.0	8,208	17,428	575	18,003	192	838	3.0	17,130	68.9
1990[3]	5,650	23,500	4.35	32.9	7,800	18,680	572	19,252	227	1,159	3.1	18,082	72.1

[1] Preliminary. [2] Ready-to-cook basis. [3] Estimate. *Source: Economic Research Service, U.S.D.A.* T.39

Average Wholesale Broiler[1] Prices RTC In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Avg.	4-Region Ave. Retail	Hens-N.Y.[2] 8–16 Lbs.
1984	62.1	61.2	62.0	56.0	57.6	55.5	57.3	51.5	53.6	48.8	52.1	49.0	55.6	81.4	74.4
1985	52.8	51.9	49.7	47.8	50.9	53.4	50.2	50.1	52.2	48.3	53.7	48.7	50.8	76.3	75.5
1986	51.7	49.0	50.3	50.0	54.6	58.3	69.1	69.7	61.0	61.6	57.5	50.0	56.9	83.5	72.2
1987	51.8	49.8	48.5	48.6	50.5	45.5	47.0	52.6	46.4	43.2	44.6	39.8	47.4	78.5	57.8
1988	43.9	44.9	48.4	48.7	56.6	61.5	66.5	68.9	62.8	57.7	57.1	58.8	56.3	85.4	61.1
1989	58.0	58.0	62.1	63.5	70.4	67.4	62.0	57.3	59.9	51.7	49.2	48.4	59.0	92.7	66.7
1990	51.7	57.4	60.4	55.3	57.9	56.4	59.5	54.9	57.4	48.8	48.0	49.6	54.8	89.9	63.2

[1] Ice packed, ready-to-cook. [2] In retail stores (urban areas), whole or cut-up ready to cook. *Source: Bureau of Labor Statistics* T.37

Butter

Butter production in the U.S. during January to August 1990 was 869 million pounds, almost 3 percent less than in the same period of 1989. Production in 1989 was estimated to be 1.27 billion pounds, up from 1.21 billion in 1988. Commercial use of butter in June-August 1990 was 6 percent more than a year earlier. Disappearance of butter in the first half of 1990 totaled 408 million pounds, up sharply from 334 million in 1989. Domestic per capita consumption during the 1980s was about 4.6 pounds.

Commercial dairy stocks in September 1990 were the equivalent of 5.6 billion pounds on a milk-fat basis, down 4 percent from 1989. While stocks of American cheese and nonfat dry milk were above year-earlier levels, butter inventories fell by 43 percent to 50 million pounds. Butter stocks in September 1989 were 87 million pounds. Government butter inventories as of September 1, 1990 rose by 5 percent from a year earlier to 376.5 million pounds; stocks in 1989 were 357.3 million pounds, up sharply from 226.8 million in 1988.

Total Commodity Credit Corporation (CCC) purchases of butter during the Jan.-Sept. 1990 period totaled almost 347 million pounds, down about 8 percent from a year earlier. That total included butteroil in the equivalent of 14 million pounds of butter for export under the Dairy Export Incentive Program. USDA was likely to continue to make sizable purchases of butter, as supplies outpace commercial use. On October 1, 1990, uncommitted CCC inventories of butter were 342 million pounds, versus 191 million on the same date in 1989. The CCC held no inventories of cheese and only small amounts of nonfat dry milk.

Wholesale prices of Grade A butter in Chicago trended lower in 1990. Over the January to September period, prices averaged 103.3 cents per pound, while the yearly average was 127.9 cents in 1989 and 132.5 cents in 1988. Butter prices declined in 1990, though prices of fluid milk and cheese rose.

During 1990, the world price of butter fell by more than 20 percent to 60 cents per pound. Worldwide butter production in 1990 was forecast at 6.7 million tonnes, up 1 percent from 1989, with increases expected in South America, the USSR, Eastern Europe and India. World exports of butter and butteroil in 1990 were forecast at 810,000 tonnes, down 3 percent from 1989. Exports by the European Community (EC) and the U.S. were expected to decline.

The EC has attempted to increase butter exports by raising export subsidies and reducing support prices. A growing butter inventory and price undercutting by other exporters led the EC to take these actions, which caused prices to move even lower.

USDA indicated that U.S. exports of dairy products got off to a slow start in 1990, due to weak butter shipments. However, part of that was related to the reporting methods of the Census Bureau. The Bureau's data did not include butter that was exported to the Soviet Union out of CCC stockpiles, and when that is accounted for, butter exports were actually higher. During the May to July 1990 period, U.S. dairy product exports surged, partly because of increased shipments of butter. Over the first seven months of 1990, exports of dairy products rose to 2.9 billion pounds, sharply above 1989 levels.

Imports of dairy products on a milk-equivalent, milk-fat basis during January to July 1990 totaled 1.5 billion pounds, 15 percent above a year earlier. Butter imports increased in the period.

Supply and Distribution of Butter in the United States In Millions of Pounds

	Supply				Distribution									93 Score Wholesale Prices	
					Domestic Disappearance					Dept. of Agr.				$ Lb.	
Year	Production	Cold Storage Stocks[1] Jan. 1[2]	Imports	Total Supply	Total	Donated	Per Capita —Lbs.—	Exports	Shipments[4]	Jan. 1 Stocks[5]	Dec. 31 Stocks[5]	Removed by U.S.D.A. Programs	Total Use	Calif. AA	Chi. AA
1987	1,104	252	5	1,361	1,128	225	4.6	85	1	220	96	187.3	1,214	1.6748	1.4172
1988	1,208	147	5	1,359	1,098	191	4.5	45	1	96	173	312.6	1,144	1.6097	1.3412
1989[3]	1,274	215	5	1,493	1,067	204	4.3	150	1	173	223	413.4	1,218		
1990[6]	1,320	275								223		400.3			

[1] Includes butter-equivalent of butteroil. [2] Includes stocks held by U.S.D.A. [3] Preliminary. [4] Includes U.S.D.A. shipments to Territories. [5] Includes butteroil. [6] Estimate. *Source: Department of Agriculture*

T.43

Commercial Disappearance of Creamery Butter in the U.S. In Millions of Pounds

Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total	Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
1983	209.5	198.6	217.0	256.6	881.7	1987	222.7	222.1	218.4	239.3	902.5
1984	194.0	241.3	215.6	251.9	902.7	1988	194.5	221.6	219.7	274.0	909.8
1985	200.0	203.9	241.5	272.9	918.2	1989[1]	188.3	145.6	228.8	291.3	854.1
1986	198.6	220.1	234.4	269.8	922.9	1990[1]	184.3	217.1	217.5		

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.*

T.46

World (Total) Butter[1] Production In Thousands of Metric Tons

Year	Australia	Brazil	Canada	E. Germany	Czechoslovakia	Argentina	Denmark	France	Ireland	W. Germany	Netherlands	N. Zealand	India	Poland	Sweden	USSR	South Africa	United Kingdom	United States
1981	79	60	125	281	127	32	108	599	125	545	183	247	620	260	64	1,318	15	170	557
1982	76	70	134	266	138	37	121	624	140	556	216	248	650	265	70	1,403	17	216	570
1983	88	70	118	291	149	34	131	637	164	627	271	252	670	300	73	1,562	19	240	589
1984	111	70	119	309	152	29	104	621	171	572	241	287	690	322	77	1,588	18	205	500
1985	114	70	108	316	150	32	110	595	163	515	306	293	700	308	74	1,596	17	202	566
1986	105	65	109	320	156	32	112	633	160	567	377	299	720	289	66	1,700	15	222	545
1987	104	65	95	322	149	34	96	569	150	464	234	248	750	290	64	1,742	11	174	501
1988	98	65	105	310	148	35	94	521	139	390	214	276	850	293	61	1,724	15	140	547
1989[2]	101	65	99	313	155	45	92	518	142	398	213	246	880	325	70	1,726	16	130	577
1990[2]	106	75	97	305	155	40	94	520	151	381	205	276	910	335	77	1,800	20	142	565

[1] Factory (including creameries and dairies) & farm. [2] Preliminary. [3] Forecast. *Source: Foreign Agricultural Service, U.S.D.A.* T.44

Production of Creamery Butter in Factories in the United States In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	123.1	108.4	115.5	117.3	115.5	95.9	82.7	82.3	85.2	99.5	93.4	109.5	1,228
1982	127.3	115.9	123.4	334.0			256.4			300.0			1,257
1983	139.1	119.2	123.6	124.0	120.7	103.7	91.4	84.6	84.7	100.5	98.1	109.6	1,299
1984	127.3	108.9	107.6	103.0	105.1	81.8	72.7	70.2	67.5	84.4	79.8	95.1	1,103
1985	116.8	104.6	105.9	111.4	112.9	95.6	92.4	92.1	92.1	109.3	99.4	115.4	1,248
1986	136.7	119.3	119.2	122.7	114.7	93.0	79.7	69.9	80.2	85.3	80.3	101.3	1,202
1987	111.9	97.4	105.4	102.6	98.2	81.5	75.2	66.4	77.9	91.2	87.9	108.5	1,104
1988	126.1	119.7	115.5	113.8	108.0	90.8	76.3	74.1	83.3	92.3	95.6	112.0	1,208
1989[1]	129.0	124.7	135.7	124.7	122.5	95.3	72.2	80.1	81.6	95.1	94.4	107.4	1,274
1990[1]	134.0	127.3	136.2	125.6	121.6	95.9	85.1	83.8	84.8	105.0			

[1] Preliminary. [2] Estimate. *Source: Crop Reporting Board, U.S.D.A.* T.45

Cold Storage Holdings of Creamery Butter in the U.S., on First of Month In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981	304.6	332.1	372.3	407.4	450.4	473.6	507.5	515.5	515.6	489.5	470.0	451.1
1982	429.2	430.3	440.4	447.8	—	—	541.6	—	—	510.0	—	—
1983	466.8	485.4	522.0	529.0	555.7	576.1	589.6	588.4	581.8	552.3	523.9	506.7
1984	499.4	510.6	532.5	529.3	532.4	538.5	516.7	489.6	462.7	426.3	374.3	335.9
1985	296.6	277.3	289.4	291.7	272.7	283.2	286.8	280.7	264.6	247.0	231.6	206.9
1986	205.5	206.3	242.4	283.3	305.0	330.8	342.8	337.6	304.4	279.6	253.3	218.5
1987	193.0	206.6	231.6	254.0	247.9	251.1	237.9	211.2	187.3	176.2	165.6	158.5
1988	143.2	157.3	198.9	221.1	240.4	280.5	293.4	295.8	294.4	253.4	237.3	226.2
1989	214.7	246.6	314.4	341.9	377.2	438.3	464.1	461.3	439.7	407.9	370.6	294.1
1990[1]	256.2	262.0	285.1	318.8	392.2	392.2	417.2	418.1	424.0	408.6	411.3	401.6
1991												

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.47

Wholesale Price of 92 Score Creamery (Grade A) Butter at Chicago In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1981	147.3	147.3	147.3	147.3	147.3	147.5	147.9	148.0	148.5	150.6	148.9	148.1	148.0
1982	147.5	147.5	147.8	147.4	147.3	147.3	147.6	148.1	148.4	147.4	148.2	147.9	147.7
1983	147.3	147.3	147.3	147.3	147.3	147.3	147.8	151.0	147.6	147.3	143.1	143.1	147.3
1984	140.4	141.3	142.1	142.9	142.9	150.0	155.6	150.6	158.1	158.1	158.1	145.6	148.8
1985	141.5	141.3	141.3	141.9	141.9	141.9	141.5	140.7	141.2	141.6	139.5	139.1	141.1
1986	138.8	138.8	137.5	138.8	138.8	139.1	143.7	153.9	154.2	153.5	151.9	145.5	144.5
1987	137.3	136.8	137.8	138.8	138.4	144.6	149.0	148.1	145.3	136.8	135.6	134.0	140.2
1988	131.9	131.0	131.0	131.0	131.0	133.5	135.9	135.6	134.3	132.0	131.3	131.3	132.5
1989	131.0	131.0	131.0	131.0	131.0	131.0	130.3	132.8	125.1	120.5	120.5	120.0	127.9
1990	110.9	108.3	108.3	106.9	99.0	98.4	100.3	98.9	98.9	98.9	98.9	98.0	102.1
1991													

Source: Economic Research Service, U.S.D.A. T.48

Cadmium

Cadmium was one of the more spectacular bear markets in 1990, with prices falling to $1.25 a pound from $5.30 in late 1989. According to most market analysts, price prospects in 1991 were more likely to lean towards $1.00 a pound than towards a recovery.

In 1988, a frenzy of activity in the Far East caught nickel-cadmium battery manufacturers with lean inventories. This unexpected surge of buying interest drove prices to almost $7.00 a pound in 1988. However, by 1989's end, demand had flattened out, and battery makers' production schedules were able to catch up, sending cadmium prices sharply lower during 1990.

According to the Bureau of Mines, U.S. imports of cadmium metal for the first five months of 1990 were 40 percent lower than the level in the equivalent months in 1989. From January through May, 675 tonnes were imported, versus 1989's full-year import total of 2,787 tonnes.

Among the suppliers of cadmium to the U.S. in 1990, Canada was first and foremost, providing 359 tonnes of cadmium metal in January to May, compared with 947 tonnes for all of 1989. Other major suppliers were Australia with 70 tonnes, Mexico with 53 tonnes, and the U.K. with 45 tonnes.

U.S. cadmium exporters saw gains during the first five months of 1990. Cadmium exports rose by 38 percent to 214 tonnes, compared with the similar five-month period in 1989. For all of 1989, cadmium exports totaled 369 tonnes. However, cadmium exports in 1990's second quarter were the lowest in four years, at 12 tonnes for the period.

Total world refinery production of cadmium in 1989 was 21,002 tonnes. The USSR was the leading producer with 3,000 tonnes, followed by Japan, Belgium, and Canada. The U.S. produced 1,550 tonnes.

Cadmium is considered a toxic metal and stringent environmental rules concerning its handling and disposal were passed in 1989 and implemented in 1990. Coatings of zinc substitute for some cadmium applications.

World Refinery Production of Cadmium In Metric Tons

Year	Australia	Belgium	Canada	China	Finland	France	W. Germany	Italy	Japan	Mexico	Norway	Poland	Un. King.	USSR	United States[3]	Zaire	World Total
1978	747	1,164	1,265		611	694	1,182	378	2,531	897	120	761	291	2,800	1,653	186	17,310
1979	804	1,440	1,455		590	689	1,266	527	2,597	830	115	773	424	2,850	1,823	212	18,679
1980	1,012	1,524	1,303	250	581	789	1,194	568	2,173	778	130	698	375	2,850	1,578	168	18,238
1981	1,031	1,176	1,298	270	621	663	1,192	489	1,977	590	117	580	278	2,900	1,603	230	17,381
1982	1,010	996	854	300	566	793	1,030	475	2,034	607	104	570	354	2,900	1,007	280	16,387
1983	1,121	1,260	1,456	300	616	513	1,094	385	2,214	847	117	570	340	3,000	1,052	308	17,636
1984	1,082	1,472	1,605	300	614	568	1,111	452	2,423	838	150	570	390	3,000	1,686	318	19,463
1985	910	1,252	1,717	540	565	337	1,095	526	2,535	734	159	600	370	3,000	1,603	296	18,924
1986	915	1,374	1,484	650	522	431	1,218	411	2,489	1,016	154	600	379	3,000	1,486	364	19,070
1987	944	1,308	1,481	680	690	457	1,125	320	2,450	935	147	600	498	3,000	1,515	299	19,066
1988[1]	855	1,836	1,742	750	703	558	1,159	705	2,614	1,259	169	600	399	3,000	1,885	281	21,899
1989[2]	900	1,790	1,750	800	600	500	1,190	500	2,690	1,200	200	600	395	3,000	1,550	270	21,002
1990[2]	850	1,700	1,800						2,600	1,100					1,700		21,800

[1] Preliminary. [2] Estimate. [3] Primary & secondary metal. *Source: Bureau of Mines*

T.49

Salient Statistics of Cadmium in the United States In Metric Tons of Contained Cadmium

Year	Net Import Reliance as a % of Apparent Consumption	Production					Imports[3] of Cadmiuim Metal				N.Y. Dealers Price[5] $ per lb.	Exports		Consumption[4]	Stocks, Dec. 31			
		Primary					From:					Cadmium Metal, Alloys, Dross,			Industry			
			Producers															
		Metallic	Shipments	Value Mil. $	Cadmium Sulfide	Other Compounds	Australia	Canada	Mexico	Total		Flue Dust	Value Ths. $		Metallic	Compounds	Distributors	In Compounds
1978	63	1,653	1,957	5.9	698					2,881	2.45	326	864	4,510	1.152	45	296	
1979	64	1,823	2,468	9.5	813					2,572	2.76	211	550	5,099	517	52	327	
1980	55	1,578	1,271	5.2	801					2,617	2.84	236	464	3,534	841	42	439	
1981	63	1,603	1,382	3.8	527					3,090	1.93	239	332	4,378	1,077	68	215	
1982	73	1,007	1,832	2.6	374	971	446	375	171	2,305	1.11	11	126	3,728	635	167	150	
1983	72	1,052	1,495	1.8	670	1,024	713	938	126	2,196	1.13	170	351	3,763	209	49	91	
1984	51	1,686	1,811	2.6	771	1,510	363	862	174	1,889	1.32	106	208	3,300	208	59	52	
1985	57	1,603	1,791	2.4	477	1,021	483	1,044	162	1,988	.92	86	342	3,720	136	111	59	380
1986	66	1,486	2,030	1.9	645	1,459	589	1,221	441	3,174	1.07	38	188	4,385	303	73	65	482
1987	64	1,515	1,916	1.9	540	1,511	427	1,164	496	2,701	1.60	241	660	4,178	126	98	37	459
1988[2]	48	1,885	2,074	5.4	345	1,497	31	858	590	2,482	6.91	613	3,697	3,620	332	128	21	373
1989[1]	62	1,550	2,015	2.3	267	1,451	—	947	616	2,787	6.28	369	857	4,096	241	77	8	400
1990[1]	54	1,700								2,300	3.60	400		3,700	650			

[1] Estimate. [2] Preliminary. [3] For consumption. [4] Apparent Primary cadmium in all forms. [5] Sticks & Balls in 1 to 5 short ton lots.
Source: Bureau of Mines

T.50

Castor Beans

With larger crops in India, China, and Brazil, world castorseed production in 1990/91 was forecast to rise to 1.289 million tonnes from 1.080 million in the previous season, according to *Oil World*, the statistical publication. Because of increases in plantings and in yields, output in India has expanded rapidly in recent years and was estimated at 700,000 tonnes, up from 500,000 in 1989/90. China had a bumper crop of 285,000 tonnes in 1990, versus 270,000 the year before. Brazil's production was estimated at 130,000 tonnes, which was up slightly from a year earlier, but below levels that prevailed in the mid-1980s.

India was the largest producer of castor oil in 1990/91, accounting for an estimated 239,000 tonnes, or about half of worldwide output. The country's oil production in 1989/90 was 168,000 tonnes. Other major castor oil producers included China, with 83,000 tonnes in 1990/91, followed by Brazil with 63,000.

Castor oil prices, ex-tank Rotterdam averaged $1,062 a tonne during 1989/90 (Oct.-Sept.). In the first five months of the 1990/91 season (Oct.-Feb.), prices had fallen to an average $825, as a result of ample supplies.

World Production of Castorseed Beans In Thousands of Metric Tons

Crop Year	China	Brazil	Ecuador	Ethiopia	India	Romania	Paraguay	Israel	Mexico	Pakistan	Thailand	USSR	Philippines	Sudan	World Total
1985–6	280	418	6	1	308	6	38		4	22	33	62	12	1	1,218
1986–7[1]	235	263	5	1	230	8	39		4	21	36	68	7	1	944
1987–8[2]	330	104	6	1	185	8	44		4	20	29	66	8	2	828
1988–9[2]	260	146	6		417		49		4	14	23	60			1,028
1989–90[2]	270	128			500		45		4	13	24	46			1,080
1990–1[2]	285	130			700				4			37			1,289

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.; "The Oil World."* T.51

Castor Oil Consumption[1] in the United States In Thousands of Pounds

Crop Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1985–6[2]	4,807	3,614	3,840	2,833	5,016	4,935	4,528	5,282	5,602	7,054	6,084	6,111	59,706
1986–7[2]	6,982	5,569	4,743	5,754	5,867	6,251	5,939	6,749	6,984	4,964	3,357	7,078	70,237
1987–8[2]	7,254	7,115	6,943	5,240	6,529	6,984	5,353	6,307	5,457	4,823	7,054	5,466	72,525
1988–9[2]	5,720	6,565	5,018	5,539	4,665	5,424	5,062	4,827	4,914	3,155	5,680	2,644	59,213
1989–90[2]	4,325	4,570	3,568	4,268	4,487	4,724	4,385	4,436	4,092	3,847	5,156	3,833	51,691
1990–1[2]	3,334	2,822											

[1] In inedible products (Resins, Plastics, etc.). [2] Preliminary. *Source: Bureau of the Census.* T.52a

Castor Oil Stocks in the United States In Thousands of Pounds

Crop Year	Oct. 1	Nov. 1	Dec. 1	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1
1985–6[1]	14,632	17,087	28,477	21,031	24,754	25,586	26,263	19,739	30,125	24,740	29,809	26,919
1986–7[1]	22,212	26,907	31,876	29,376	35,042	30,039	39,369	30,616	40,460	40,821	43,204	41,246
1987–8[1]	33,738	36,060	31,757	48,027	43,191	37,297	47,945	41,480	37,969	32,051	26,885	16,472
1988–9[1]	9,614	13,826	15,402	14,448	6,738	9,620	13,256	10,794	13,257	13,934	12,898	10,201
1989–90[1]	9,556	11,869	10,486	N.A.	N.A.	13,708	11,852	17,948	21,101	32,992	25,295	26,793
1990–1[1]	18,819	18,118	24,567									

[1] Preliminary. *Source: Bureau of the Census.* T.52b

Monthly Average Wholesale Prices of Castor Oil No. 1, Brazilian Tanks at New York In ¢ per Lb.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1985	65.00	65.00	65.00	65.00	65.00	36.00	36.00	36.00	36.00	36.00	36.00	34.00	47.92
1986	34.50	34.50	34.50	34.50	33.38	32.25	32.38	32.56	31.70	31.63	32.00	33.00	33.08
1987	32.80	32.25	34.27	36.00	36.00	36.00	42.50	42.50	43.10	44.00	44.00	46.50	39.16
1988	46.50	46.50	52.50	51.38	49.88	49.50	48.75	48.00	48.00	48.00	48.50	49.00	48.88
1989	51.00	51.75	51.90	51.50	51.50	51.50	51.50	51.50	51.50	51.50	51.50	51.50	51.51
1990	54.50	53.50	52.60	52.00	51.20	51.00	51.00	51.00	45.00				

Source: Foreign Agricultural Service, U.S.D.A. T.53

Cattle and Calves

Typically, the largest number of feeder cattle are placed on feed during the fall. The year 1990 proved an exception, although not to the extent initially expected. October placements were relatively large. Still, owing to large third-quarter placements and favorable range and pasture conditions that encouraged producers to delay placements and to retain calves on grass, fewer and heavier weight stocker and feeder cattle were likely to be placed on feed during 1990's fourth quarter. In fourth-quarter 1989, placements in the thirteen reporting states were unusually large at 7.3 million head, 28 percent above the July-September period. Unlike 1990, poor fall pasture and range conditions, especially in winter wheat grazing areas, spurred placements in late 1989.

Fed cattle slaughter in late 1990 was likely to be equal to or larger than the level a year earlier. However, the slaughter mix in 1990's fourth quarter showed fewer cows and bulls, which is indicative of some herd rebuilding.

Beef production in 1990 was estimated at 22.8 million pounds, down 1 percent from 1989's 23 million. As usual, third-quarter beef production was the highest, totaling 5.9 million pounds and a shade higher than a year earlier. Mid-summer cattle weights averaged 5 pounds over 1989's record, owing largely to heavier fed cattle marketings. The average commercial live weight in August of 1,144 pounds equated to a dressed weight of 696 pounds. By October, the averages were 1,152 and 703 pounds, respectively, versus October 1989 weights of 1,152 and 696 pounds. Commercial beef production in 1991 was expected to rise by 1 to 2 percent, with the greatest increase coming in the second half of the year.

Total calf slaughter, which has been in a long-term downtrend, declined sharply during first-half 1990 against a year earlier. Changes in the young-calf certification program may have contributed to the reduced slaughter. The certificate now requires specific wording that the calf has not been given medication or that a prescribed withdrawal period has passed for any medication used. The program was initially passed in 1984 to help control sulfonamide and antibiotic residues in young calves. The program is voluntary, but the rules were tightened in 1990, and stiff fines or prison sentences can now be imposed for falsifying certificates. Some calf-slaughter plants may now desire to slaughter only certified young calfs, which may have been a factor that lowered 1990 calf slaughter.

U.S. cattle imports were forecast to reach 1.6 million head in 1990, up 3 percent from 1989. More than half the cattle was imported from Mexico, with Canada supplying the balance. Canadian imports were up sharply during the first four months of 1990, reflecting a widening price spread between slaughter steers in Western Canada and U.S. choice steers in Omaha. The U.S. exports some cattle, mostly to Mexico.

Beef and veal imports by the U.S. declined slightly in 1990 from the 2.175 million pounds in 1989. Australia is the largest supplier, followed by New Zealand, Canada, and Argentina. Imports from Australia slipped in 1989, as more of its production went to Japan. U.S. beef and veal exports go mostly to Japan, with Canada a distant second.

Heavier-weight feeder prices in 1990 were expected to average in the low $90s/cwt., versus $87 a year earlier. Choice Omaha steer prices in October averaged $76.75/cwt. in October, up from $69.69 a year earlier.

Prices of live cattle futures advanced in 1990 and posted an all-time high of over 81 cents/lb. late in the year. Prior to 1990, the last time cattle futures reached the 80-cent level was in 1979.

Retail beef prices in 1991 were expected to stay near or slightly above 1990 levels. Higher prices and slack income growth, coupled with larger supplies of competing meats, could cause downside price vulnerability in 1991. Nevertheless, cattle inventory totals suggested that supplies would not be burdensome for some time, which was likely to help buoy beef prices.

Futures Markets

Live cattle futures and options on futures are traded on the Chicago Mercantile Exchange and the Mid America Exchange. Feeder cattle futures are also traded on the CME.

World Cattle and Buffalo Numbers as of January 1 In Millions of Head

Year	Argentina	Australia	Brazil	Canada	China	Colombia	France	W. Germany	India	Poland	Turkey	Mexico	South Africa	USSR	Un. Kingdom	United States	World Total
1984	54.4	22.2	93.3	11.6	78.1	21.7	23.5	15.6	267.5	11.1	16.0	33.9	12.1	119.6	13.1	113.7	1,033
1985	54.7	22.8	94.7	11.3	82.6	21.2	23.1	15.7	271.4	10.9	15.5	33.9	12.0	121.1	13.0	109.7	1,041
1986	53.5	23.4	95.2	11.0	86.8	19.9	22.8	15.6	275.3	10.8	15.0	32.2	11.8	120.9	12.7	105.5	1,039
1987	51.7	23.5	97.0	10.8	91.7	18.8	22.2	15.3	273.6	10.5	14.5	33.6	12.0	122.1	12.5	102.0	1,038
1988	50.8	23.5	98.3	10.9	94.7	18.4	21.1	14.9	264.9	10.2	14.0	35.4	12.2	120.6	11.8	99.6	1,026
1989	50.8	23.9	98.3	11.0	98.0	17.6	20.1	14.7	269.2	10.1	13.4	35.0	12.7	119.6	11.9	99.2	1,030
1990[2]	50.6	24.6	98.2	11.2	101.4	16.8	20.0	14.6	272.3	10.1	12.0	31.7	13.4	118.3	11.9	99.3	1,029
1991[1]	50.8	25.0	101.3	11.4	111.5	16.1	19.8	14.6	275.4	9.9	10.3	30.0	13.6	117.5	12.1	101.0	1,044

[1] Forecast. [2] Preliminary. *Source: Foreign Agricultural Service, U.S.D.A.* T.54

Cattle Supply and Distribution in the United States In Thousands of Head

Year	Cattle & Calves on Farms Jan. 1	Imports	Calves Born	Total Supply	Livestock Slaughter—Cattle and Calves					Deaths on Farms	Exports	Total Disappearance
					Commercial							
					Federally Inspected	Other[2]	All Commercial	Farm	Total Slaughter			
1983	115,001	921	43,885	159,807	37,614	2,112	39,726	410	40,136	5,494	56	45,686
1984	113,360	753	42,470	156,583	38,910	1,969	40,879	388	41,259	5,464	71	46,794
1985	109,582	836	41,050	151,468	37,933	1,745	39,678	370	40,048	5,046	125	45,219
1986	105,378	1,407	41,182	147,967	39,108	1,588	40,696	351	41,046	4,998	108	46,152
1987	102,118	1,200	40,152	143,470	37,147	1,315	38,462	330	38,792	4,800	131	43,723
1988	99,622	1,332	40,588	141,542	36,459	1,124	37,585	286	37,889	4,626	321	42,836
1989[1]	99,180	1,459	40,142	140,781	35,110	979	36,089	287	36,376	4,440	169	40,985
1990[3]	99,337				34,800							

[1] Preliminary. [2] Wholesale and retail. [3] Forecast. *Source: Economic Research Service, U.S.D.A.* T.56

United States Beef Supply and Utilization

Year	Commercial production	Farm production	Beginning stocks	Imports	Total supply	Exports	Shipments	Military purchases	Ending stocks	Total disappearance	Per capita disappearance	Retail weight per capita	Civilian Population
	Million Pounds										*Pounds*		*Million*
Year	23,557	171	358	2,071	26,157	328	51	115	317	25,347	106.9	79.1	237.00
1986 I	5,769	55	420	502	6,745	102	13	24	395	6,236	25.9	18.9	240.7
II	6,246	24	395	482	7,147	83	12	33	427	6,626	27.5	20.1	241.2
III	6,273	24	427	640	7,364	144	14	30	385	6,820	28.2	20.6	241.8
IV	5,925	55	385	505	6,871	193	13	23	412	6,253	25.8	18.8	240.2
Year	24,213	158	420	2,129	26,920	521	52	110	412	25,935	107.4	78.4	239.4
1987 I	5,754	56	412	543	6,764	127	14	32	411	6,213	25.6	18.1	240.8
II	5,737	25	411	627	6,800	136	13	23	337	6,315	25.9	18.4	241.4
III	6,084	24	337	681	7,106	159	14		381	6,552	26.8	19.0	242.0
IV	5,850	56	381	418	6,705	183	12		386	6,125	25.0	17.8	242.6
Year	23,405	161	412	2,269	26,247	604	52	104	386	25,205	103.3	73.4	241.7
1988 I	5,700	58	386	703	6,847	134	16		419	6,294	25.6	18.0	243.2
II	5,784	25	419	668	6,896	155	15		332	6,409	26.1	18.4	243.8
III	6,185	24	332	585	7,126	188	15		409	6,529	26.5	18.7	244.5
IV	5,755	58	409	423	6,645	203	15		422	6,020	24.3	17.2	245.1
Year	23,424	165	386	2,379	26,354	680	61		422	25,252	102.5	72.3	244.1
1989[1] I	5,530	40	422	566	6,558	227	15		398	5,933	23.9	16.9	245.7
II	5,777	17	397	533	6,725	265			322	6,138	24.7	17.4	246.2
III	5,893	16	322	524	6,755	267			307	6,181	24.8	17.5	246.9
IV	5,774	40	307	552	6,673	264			335	6,074	24.3	17.1	247.6
Year	22,974	113	422	2,175	25,684	1,023			335	24,326	97.8	68.9	246.6
1990[2] I	5,507	40	335	598	6,480	232			408	5,840	23.3	16.4	248.2
II	5,733	17	408	573	6,731	237			341	6,153	24.5	17.3	248.8
III	5,814	16	341	597	6,768	270			322	6,176	24.6	17.3	249.6
IV													

[1] Preliminary. [2] Forecast. *Source: Economic Research Service, U.S.D.A.* T.56b

U.S. Cattle on Feed in 13 States, Quarterly In Thousands of Head

Year	Number on Feed[1]	Placed on Feed	Marketings	Other Disappearance	Year	Number on Feed[1]	Placed on Feed	Marketings	Other Disappearance
1987	9,555	25,074	23,126	1,389	1989[2]	9,688	24,484	22,955	1,274
I	9,555	5,670	5,747	376	I	9,688	6,232	5,658	344
II	9,102	5,936	5,649	428	II	9,918	5,212	6,040	410
III	8,961	6,650	6,082	242	III	8,680	5,719	5,896	227
IV	9,287	6,818	5,648	343	IV	8,276	7,321	5,361	293
1988	10,114	24,423	23,459	1,390	1990[2]	9,943			
I	10,114	5,824	5,853	390	I	9,943	6,088	5,583	385
II	9,695	5,913	5,879	423	II	10,063	5,111	6,013	400
III	9,306	6,031	6,261	225	III	8,761	6,343	5,741	261
IV	8,851	6,655	5,466	352	IV	9,102		5,495	

[1] Beginning of period. [2] Preliminary. *Source: Economic Research Service, U.S.D.A.*

CATTLE AND CALVES

U.S. Cattle on Feed in 7 States In Thousands of Head

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1984	8,006	7,917	7,515	7,568	7,376	7,318	7,125	6,811	6,747	7,442	8,221	8,544
1985	8,635	8,169	7,877	7,814	7,495	7,444	7,057	6,404	6,155	6,461	7,582	7,892
1986	7,920	7,664	7,322	7,293	7,107	7,096	6,543	6,331	6,404	6,811	7,546	7,826
1987	7,643	7,953	7,614	7,473	7,527	7,548	7,875	7,488	6,983	7,098	7,830	8,659
1988	8,752	8,411	8,204	7,912	8,056	7,829	8,134	7,736	7,140	6,944	7,404	8,194
1989[1]	8,255	8,045	7,970	7,931	8,252	8,087	7,795	7,235	6,763	6,631	6,958	7,911
1990[1]	8,331	8,378	8,526	8,319	8,483	8,181	7,867	7,310	7,003	6,990	7,680	8,739
1991[1]	9,139											

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.54a

U.S. Cattle Placed on Feedlots in 7 States In Thousands of Head

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	1,566	1,301	1,764	1,515	1,798	1,445	1,323	1,680	2,265	2,546	1,945	1,624	20,772
1985	1,449	1,342	1,594	1,417	1,666	1,267	1,078	1,510	1,988	2,779	1,776	1,540	19,346
1986	1,581	1,220	1,650	1,565	1,756	1,162	1,544	1,802	2,103	2,403	1,814	1,435	20,035
1987	1,591	1,442	1,719	1,681	1,984	1,422	1,274	1,915	2,429	2,604	1,609	1,340	21,040
1988	1,660	1,379	1,848	1,521	2,165	1,377	1,246	1,660	2,169	2,475	1,680	1,421	20,654
1989[1]	1,706	1,610	2,065	1,539	1,624	1,293	1,291	1,638	1,953	2,652	2,001	1,552	20,834
1990[1]	1,896	1,403	1,902	1,377	1,632	1,340	1,520	1,735	2,214	2,751			

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.54b

U.S. Cattle Marketings in 7 States In Thousands of Head

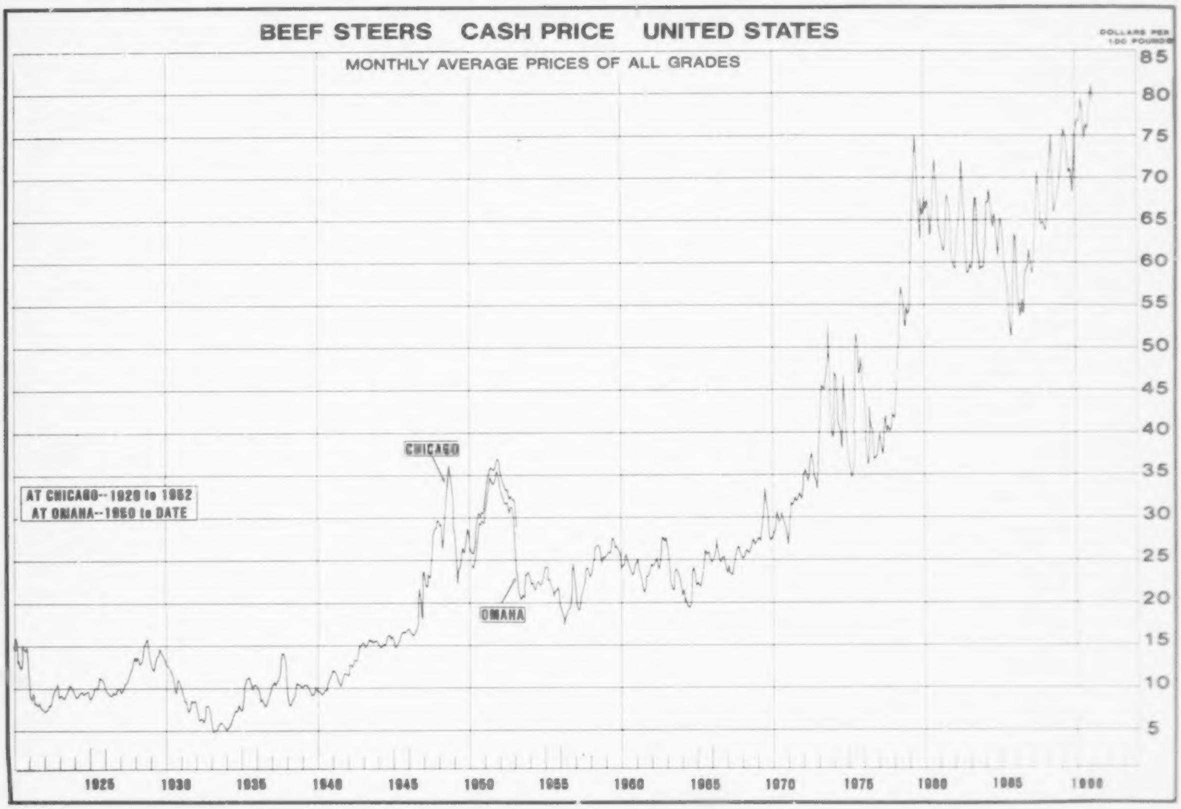
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	1,569	1,621	1,594	1,523	1,637	1,544	1,553	1,683	1,489	1,657	1,501	1,414	18,785
1985	1,782	1,540	1,559	1,603	1,589	1,572	1,670	1,670	1,603	1,573	1,380	1,401	18,989
1986	1,750	1,470	1,593	1,631	1,635	1,648	1,692	1,659	1,637	1,587	1,447	1,514	19,263
1987	1,793	1,478	1,571	1,541	1,514	1,732	1,723	1,732	1,671	1,700	1,478	1,612	19,545
1988	1,764	1,545	1,593	1,609	1,724	1,717	1,785	1,790	1,682	1,576	1,517	1,516	19,918
1989[1]	1,677	1,534	1,579	1,580	1,752	1,791	1,700	1,694	1,579	1,628	1,490	1,418	19,422
1990[1]	1,634	1,515	1,618	1,554	1,796	1,824	1,750	1,666	1,445	1,605			

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.54c

Condition[1] of Pasture and Range Feed in the United States, on First of Month In Percent of Normal

Year	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Year	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov.1
1984	75	79	80	75	70	66	74	1988	73	68	46	51	54	60	59
1985	83	81	77	70	75	76	79	1989	68	74	77	73	72	74	69
1986	76	80	83	76	79	83	85	1990[2]	76	N.A.	76	73	71	70	71
1987	81	84	82	78	76	79	71	1991							

[1] Indicates current supply of feed for grazing on non-irrigated pastures & ranges relative to that expected from existing stands under very favorable weather conditions. [80 & over, good to excellent; 65–79, poor to fair; 50–64, very poor; 35–49, severe drought; under 35, extreme drought.]
[2] Preliminary. *Source: Statistical Reporting Service, U.S.D.A.* T.57A



BEEF STEERS CASH PRICE UNITED STATES

MONTHLY AVERAGE PRICES OF ALL GRADES

Average Wholesale Prices of Beef Steers at Omaha, Choice (900–1100 Lbs.) In Dollars Per 100 Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1987	58.79	61.02	61.58	66.30	70.66	68.83	65.80	64.50	64.81	64.81	64.20	63.93	64.60
1988	65.00	68.31	71.53	72.71	75.15	70.58	65.96	67.08	67.71	69.13	70.07	71.21	69.58
1989	72.35	72.92	75.81	75.31	74.52	71.71	70.74	71.09	68.44	69.69	72.48	75.21	72.52
1990	76.73	76.61	78.15	79.36	77.57	75.63	74.46	76.22	75.75	77.50	79.93	80.88	77.40

Source: Economic Research Service, U.S.D.A. T.65

Average Prices of Steers (Stocker & Feeder) Kansas City In Dollars Per 100 Pounds

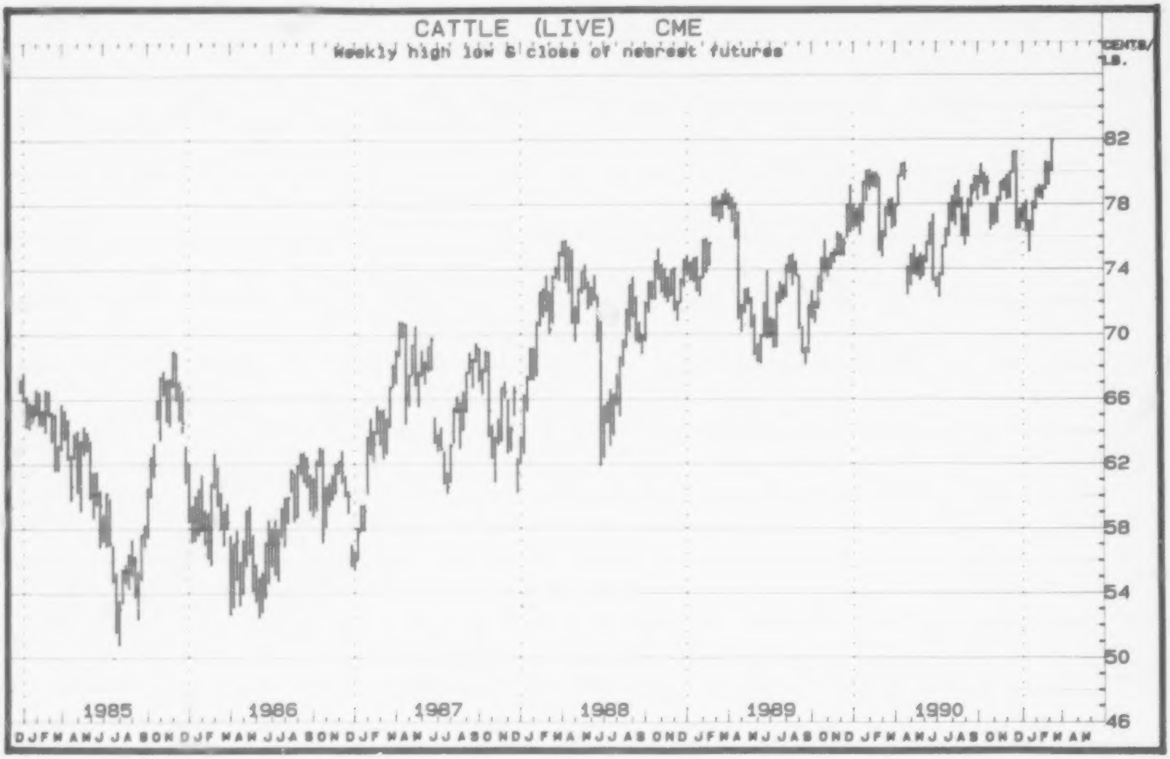
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1987	65.75	69.01	68.47	70.56	70.53	70.21	71.22	75.31	77.10	73.21	74.92	73.69	71.32
1988	80.26	81.64	83.12	82.61	78.99	70.77	74.14	79.45	79.89	82.99	81.31	80.99	80.50
1989	82.02	82.91	80.98	78.58	78.25	79.08	81.64	84.54	83.56	81.24	82.65	82.30	81.45
1990	82.47	82.86	87.50	90.81	91.90	94.74	93.50	92.30	91.50	N.A.	92.75	92.67	90.27

Source: Economic Research Service, U.S.D.A. T.61

Federally Inspected Slaughter of Cattle in the United States In Thousands of Head

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1987	3,084	2,564	2,805	2,875	2,780	2,945	3,009	2,972	2,977	3,024	2,640	2,793	34,468
1988	2,836	2,679	2,812	2,707	2,830	2,983	2,898	3,120	2,927	2,871	2,698	2,685	34,048
1989[1]	2,711	2,500	2,744	2,576	2,947	2,951	2,730	2,975	2,706	2,876	2,694	2,600	33,010
1990[1]	2,775	2,437	2,696	2,552	2,920	2,873	2,789	2,918	2,553	2,877	2,622		

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.66

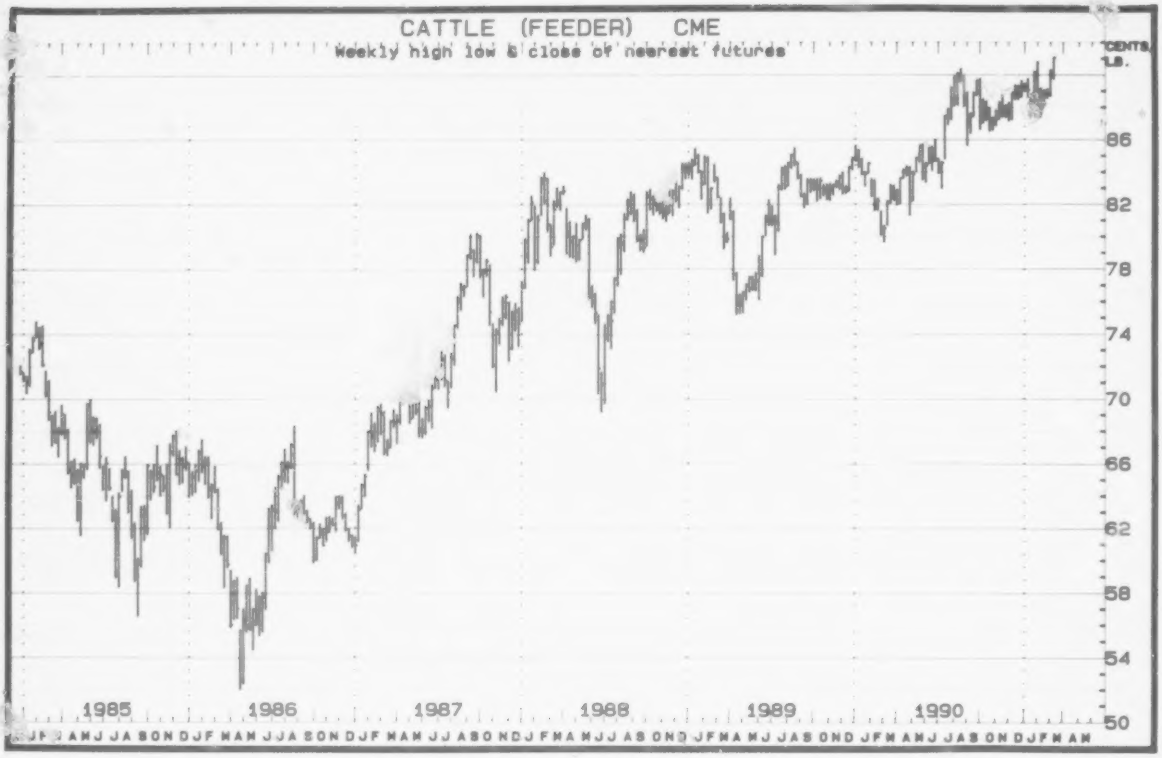


High, Low & Closing Prices of June Live Beef Cattle Futures at Chicago In Cents per Pound

Year of Delivery		Year Prior to Delivery									Delivery Year						Life of Delivery Range
		Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb	Mar.	Apr.	May	June	
1984	High	—	—	62.25	64.65	66.55	65.70	65.55	66.30	67.65	68.35	69.35	69.85	69.70	67.35	67.25	69.85
	Low	—	—	61.35	61.10	62.95	63.00	63.20	63.60	65.05	65.45	65.10	67.00	65.62	64.60	63.32	61.10
	Close	—	—	61.80	64.15	63.25	64.90	63.75	65.45	67.05	66.05	69.10	68.70	66.17	64.62	66.05	—
1985	High	—	—	66.55	67.35	67.40	67.70	67.10	68.15	68.10	69.00	69.50	67.75	66.92	64.27	61.47	69.50
	Low	—	—	66.00	65.00	65.00	65.70	65.20	66.30	66.50	66.35	66.55	64.60	62.32	59.05	56.80	56.80
	Close	—	—	66.55	65.00	67.37	66.40	66.75	67.70	67.85	68.[illegible]5	67.37	67.20	62.65	60.10	56.80	—
1986	High	—	66.60	66.05	64.55	62.75	62.25	63.40	62.45	63.05	6[illegible].[illegible]5	62.50	60.52	57.55	59.35	57.10	66.60
	Low	—	65.60	63.00	58.10	59.10	56.25	60.00	59.90	60.15	58.65	57.40	58.20	53.17	53.4[illegible]	52.42	52.42
	Close	—	65.90	63.35	60.20	59.60	62.22	61.47	62.42	61.40	61.97	61.37	58.25	57.20	54.07	56.97	—
1987	High	57.50	57.00	57.95	60.00	58.75	59.25	57.45	58.07	57.50	61.17	62.50	64.35	67.25	70.45	69.75	70.45
	Low	53.35	53.70	53.30	55.85	57.00	56.30	55.25	56.50	54.90	55.67	59.45	59.80	62.75	65.47	66.90	53.30
	Close	56.35	54.20	55.60	58.30	58.75	56.82	57.05	57.20	55.55	61.02	62.40	63.42	67.20	67.67	69.62	—
1988	High	63.20	65.00	64.90	64.90	68.40	69.65	68.20	65.32	65.92	68.90	71.25	72.50	72.37	74.22	73.57	74.22
	Low	61.20	62.10	62.30	62.60	63.67	67.22	60.60	60.80	62.00	65.30	66.70	67.37	68.60	70.60	69.47	60.60
	Close	63.20	62.40	64.40	64.45	68.15	67.32	62.52	63.77	65.50	66.85	68.40	70.87	70.90	72.15	70.60	—
1989	High	69.20	70.90	75.05	75.20	74.80	74.60	74.90	74.00	74.92	75.67	75.90	75.25	73.37	72.80	73.85	75.90
	Low	68.60	69.00	69.50	71.85	71.55	72.30	73.25	71.80	71.32	72.50	73.35	72.82	70.10	68.50	68.15	68.15
	Close	69.20	69.80	73.75	73.05	74.10	73.77	73.87	72.20	74.17	75.40	75.05	73.02	71.45	68.90	73.72	—
1990	High	—	72.40	72.90	73.25	73.45	72.55	72.50	72.37	72.25	72.75	73.00	73.45	74.20	75.42	77.35	77.35
	Low	—	69.75	69.97	70.60	71.55	71.10	70.85	70.55	71.05	71.40	70.00	70.75	72.40	73.07	74.15	69.75
	Close	—	69.80	71.05	72.25	71.87	72.00	71.25	71.57	71.87	71.80	70.95	72.92	72.97	74.00	76.65	—
1991	High	—	74.60	74.20	75.45	75.42	74.10	73.90	74.30	75.05	75.62						
	Low	—	72.75	72.62	72.80	72.52	72.70	72.15	72.32	73.47	74.37						
	Close	—	72.75	72.90	75.45	73.00	72.85	73.10	73.87	74.82	74.97						

Source: Chicago Mercantile Exchange

T.62



Average Open Interest of Live Beef Cattle Futures at Chicago In [illegible]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	[illegible]	Sept.	Oct.	Nov.	Dec.
1983	47,651	54,749	61,161	[illegible]	58,832	52,045	46,036	45,464	52,674	49,597	48,839	49,851
1984	55,430	53,303	59,509	55,090	48,169	41,389	40,280	36,359	38,724	39,975	56,086	58,501
1985	58,544	57,763	60,999	59,309	53,332	48,603	49,092	43,730	49,443	55,616	67,849	63,076
1986	57,943	54,947	55,427	49,185	56,179	55,018	64,385	63,170	64,401	56,402	62,751	58,561
1987	62,770	83,958	91,018	89,818	98,350	86,144	81,399	81,315	90,915	80,156	75,379	74,839
1988	77,436	92,363	105,307	97,582	91,480	85,257	82,080	81,025	80,935	80,356	82,790	76,683
1989	80,464	84,909	93,240	82,267	81,588	69,981	78,045	76,582	73,530	65,807	73,962	71,508
1990	95,515	108,149	104,647	95,709	86,875	76,130	70,462	68,375	69,611	67,122	70,576	69,647

Source: Chicago Mercantile Exchange T.64

Volume of Trading of Live Beef Cattle Futures at Chicago In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	370.4	332.7	455.8	489.0	389.1	328.9	302.2	324.9	344.1	335.4	297.9	277.9	4,248.2
1984	457.4	397.6	404.2	323.2	256.4	215.5	265.3	202.6	181.0	245.9	345.7	258.5	3,553.3
1985	340.7	290.3	327.9	304.3	412.0	317.2	440.5	370.2	400.2	445.3	405.0	383.8	4,437.3
1986	492.6	381.0	408.2	[illegible]	424.2	374.5	448.7	373.0	387.1	376.9	289.4	273.0	4,690.5
1987	376.6	426.7	[illegible]	456.6	523.7	357.8	394.8	412.7	485.8	580.4	363.1	377.0	5,229.3
1988	425.1	455.6	543.9	468.0	467.8	571.3	463.4	511.8	415.0	417.5	383.9	353.9	5,477.2
1989	452.9	357.7	409.0	404.2	382.9	370.3	327.9	331.9	376.9	345.4	266.2	240.2	4,265.7
1990	400.5	350.0	354.1	327.6	372.2	263.9	298.5	327.7	273.3	320.3	268.4	240.8	3,797.4

Source: Chicago Mercantile Exchange T.63

CATTLE AND CALVES

Beef Steer-Corn Price Ratio at Omaha[1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1985	24.8	24.1	22.2	21.5	21.5	21.0	20.4	21.7	21.8	25.7	27.8	26.7	23.3
1986	25.6	24.4	24.0	22.9	23.0	22.3	28.9	36.7	42.1	42.7	39.7	38.8	31.0
1987	40.8	43.9	41.9	42.2	40.2	38.9	41.4	43.9	42.1	41.4	38.4	36.7	41.0
1988	36.4	37.4	38.4	39.4	38.6	29.5	24.4	26.1	26.4	26.4	28.4	27.9	31.6
1989[2]	28.1	28.7	29.4	30.2	29.3	29.1	29.6	32.0	30.8	31.1	32.2	32.8	30.3
1990[2]	34.2	34.0	32.6	[illegible]1	29.3	27.9	28.5	30.9	34.5	36.5	37.3	36.5	32.8

[1] Bushels of No. 2 yellow corn equal in value [illegible] pounds liveweight of choice slaughter steers, 900–1100 lbs. [2] Preliminary.
Source: Economic Research Service, U.S.D.A. T.56c

U.S. Farm Value, Income & Wholesale Prices of Cattle & Calves

Year	Farm Value of All Cattle—Jan. 1		Gross Income From C. & C.[2] Million $	At Omaha[3]					Feeder Steers All Weights at K.C.	Cows, Utility Omaha	Vealers, Choice So. St. Paul	Cows, Commercial Omaha	Beef, Dressed (CarLots)		
				Steers			Heifers								
	Per Head $	Total Million $		Prime	Choice	Good	Good	Choice					Steer, Choice	Heifer, Choice	Cow[5] Canners[6]
				Dollars Per 100 Pounds											
1985	402	44,139	29,536		58.37	53.28	55.52	58.24	62.08	38.32	58.28	37.91	90.68	88.48	74.13
1986	391	41,280	29,376		57.74	52.04	54.76	57.56	60.38	37.22	59.92	36.96	89.00	87.72	71.31
1987	407	41,483	33,918		64.60	58.53	61.48	64.34	71.32	44.83	78.92	44.84	97.24	96.21	83.70
1988	523	52,046	36,770		69.58	67.06	69.44	68.16	80.50	47.94	227.67[7]	45.80	103.07	102.58	88.61
1989[1]	580	56,908			72.52		72.90		81.45		248.62[7]	47.28	107.80	107.70	94.40
1990[1]	614	60,285			77.40		77.91		86.12		251.75[7]	53.13			
1991[1]	653	64,900													

[1] Preliminary. [2] Excludes interfarm sales & Gov't. payments. Cash receipts from farm marketings + value of farm home consumption. [3] Weighted average prices sold out of first hands for slaughter. [5] All weights. [6] & cutter [7] Price is per head. *Source: Statistical Reporting Service, U.S.D.A.* T.60

Average Price Received by Farmers for Beef Cattle In Dollars Per 100 Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average[1]
1985	57.40	58.50	57.30	56.20	55.30	53.[illegible]	50.20	49.40	49.10	52.10	54.70	53.70	53.70
1986	53.20	53.00	52.40	50.30	51.00	50.10	52.90	54.40	54.60	54.40	54.60	53.20	52.60
1987	56.40	58.80	59.30	62.60	63.00	62.50	61.10	61.90	63.70	62.90	62.00	62.20	61.10
1988	65.40	67.40	68.30	69.00	69.30	65.00	63.20	65.90	67.20	67.00	66.70	67.20	66.60
1989	70.60	71.60	72.00	70.10	68.80	67.60	68.00	69.70	68.20	68.70	69.80	71.00	69.50
1990[2]	73.70	74.60	74.20	74.60	74.40	74.40	73.60	76.10	75.00	75.50	75.30	77.60	74.90

[1] Weighted average by quantities sold. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.68

Average Price Received by Farmers for Calves In Dollars Per 100 Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average[1]
1985	64.10	65.40	65.90	65.40	65.60	62.60	60.00	61.40	58.30	60.20	61.40	58.80	62.10
1986	60.10	62.70	61.90	58.90	58.00	58.10	59.40	61.10	63.40	62.70	62.20	62.20	61.10
1987	66.40	70.60	72.50	75.10	77.40	78.80	80.30	82.30	85.90	81.40	82.90	83.00	78.50
1988	88.20	92.60	93.50	93.20	93.40	84.90	87.70	91.00	89.50	87.80	87.80	88.60	89.20
1989	92.80	95.90	94.00	90.40	91.10	94.10	94.60	94.20	91.10	88.10	86.70	89.10	90.80
1990[2]	90.10	96.00	99.10	100.40	101.00	98.10	96.50	99.20	95.00	92.80	93.90	97.20	96.60

[1] Weighted average by quantities sold. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.69

Federally Inspected Slaughter of Calves & Vealers in the U.S. In Thousands of Head

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1985	270	236	261	252	246	221	274	272	271	298	268	298	3,168
1986	289	256	276	284	257	240	281	262	263	276	238	272	3,195
1987	248	225	251	215	189	214	220	202	229	233	211	242	2,679
1988	205	203	216	169	171	204	207	227	207	197	202	203	2,411
1989[1]	196	175	194	152	157	161	169	189	173	191	175	167	2,100
1990[1]	175	145	165	128	137	132	139	147	132	158	149		

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.67

Cement

Domestic production of all types of cement in 1990 totaled 79.7 million short tons, above 77.2 million in 1989 and 76.9 million in 1988. Forty-five companies and one state agency operated 128 plants that produced 76.4 million tons of portland cement, 3.3 million tons of masonry cement, and minor quantities of other cement.

While production rose, U.S. consumption continued to decline from the 1987 record and amounted to 90.5 million short tons, versus 90.7 million in 1989. Declines in residential and nonresidential construction hurt cement demand in 1990. The largest drop was in New England, where cement use shrank by about 20 percent. Domestic consumption was expected to fall further in 1991, because of continuing weakness in construction.

Cement imports have been falling in recent years and dropped to 13 million short tons in 1990 from 15.5 million the previous year. Mexico was the main supplier, providing 23 percent of the import total. During the year, the International Trade Commission ruled that Mexican cement was being sold in the U.S. at less than fair value. The U.S. also exports some cement, mainly to Canada. Cement exports amounted to 500,000 tons in 1990, down from 512,000 in 1989, and Canada took 90 percent of the total.

World cement production was put at 1.250 billion short tons in 1990, slightly above the 1989 level, with China and the USSR the largest producers.

World Production of Hydraulic Cement by Selected Countries In Millions of Short Tons

Year	Rep. of Korea	Brazil	Canada	China	France	West Germany	India	Italy	Japan	Poland	Spain	South Africa	Turkey	United Kingdom	United States	USSR	World Total
1986	25.8	27.9	11.7	178.0	25.9	29.3	40.1	39.6	78.6	17.4	26.5	7.4	22.1	14.8	79.9	148.9	1,106.2
1987	28.3	28.1	13.9	198.0	26.0	27.9	40.8	41.1	78.9	17.7	25.8	7.4	24.2	14.8	79.5	151.5	1,153.4
1988[1]	32.0	27.9	13.3	224.0	26.5	28.9	44.9	40.8	85.5	18.7	26.5	9.4	25.0	16.0	78.3	153.8	1,215.5
1989[2]	33.6	27.6	13.0	228.0	26.5	29.2	46.4	40.2	89.6	16.5	27.0	9.6	26.2	15.4	78.6	154.3	1,235.6
1990[2]				232	27	30	47.0	41	90		28				80	155	1,250

[1] Preliminary. [2] Estimate. *Source: Bureau of Mines* T.70

Salient Statistics of Cement in the United States

Year	Net Import Reliance as a % of Apparent Consumption	Production — Portland (Million Tons)	Production — Others[2] (Million Tons)	Production — Total (Million Tons)	Capacity Used at (Portland Mills) %	Shipments From Mills — Total Mil. Tons	Shipments From Mills — Value[4] $ Mil.	Average Value (F.O.B. Mill) $ per Ton	Stocks at Mills Dec. 31 (Million Tons)	Imports[5] (Million Tons)	Exports[5] (Million Tons)	Apparent Consumption (Million Tons)	Raw Materials Used in Producing Portland Cement — Cement Rock (Mil. Short Tons)	Limestone[6] (Mil. Short Tons)	Clay & Shale (Mil. Short Tons)	Gypsum & Anhy. Dr. (Mil. Short Tons)	Total (All) (Mil. Short Tons)
1986	18	75.2	3.6	78.8	73.7	87.6	4,408	50.32	6.7	16.1	.1	91.5	23.5	79.0	9.0	4.1	122.2
1987	19	74.6	3.6	78.2	73.6	89.2	4,394	49.23	6.2	17.5	.1	93.9	18.0	81.1	9.7	4.9	119.9
1988	19	73.3	3.6	76.9	74.3	89.5	4,370	48.85	6.0	17.3	.1	93.3	23.4	79.5	8.9	4.2	122.5
1989[3]	16	73.9	3.3	77.2	75.3	86.2	4,243	49.20	6.3	15.5	.5	90.7	21.9	81.8	9.1	4.3	123.5
1990[3]	13			79.7		87.9		49.30	6.6	13.0	.5	90.5					

[1] Preliminary. [2] Masonry, natural & pozzolan (slag-line). [3] Estimate. [4] Value received f.o.b. mill, excluding cost of containers. [5] Hydraulic & clinker cement. [6] Including oyster shells. *Source: Bureau of Mines* T.71

Average Price of Bulk Cement In 20 Cities In Dollars per Short Ton

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1987	63.28	63.25	63.66	63.50	63.50	64.35	64.25	64.25	63.73	63.73	63.73	63.73	63.75
1988	64.08	64.07	64.44	65.01	65.02	66.39	65.45	65.48	64.42	64.27	64.17	63.71	64.71
1989	63.48	63.53	63.53	63.97	63.14	63.14	63.24	63.24	63.34	62.85	62.61	62.71	63.23
1990	62.56	62.20	62.31	62.72	63.06	62.95	63.47	63.22	62.62	62.44	62.20	62.10	62.65

Source: Bureau of Labor Statistics T.74

Shipments of Finished Portland Cement from Mills in U.S. In Millions of Barrels (Approx. 376 lbs.)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total[1]
1987	25.5	24.9	34.1	41.5	43.2	47.8	49.3	45.6	47.6	50.0	38.3	30.8	481.2
1988	21.0	26.3	36.4	39.9	45.4	50.1	43.8	49.6	47.6	47.3	39.8	32.5	478.0
1989[2]	27.2	23.1	33.8	39.3	44.6	47.1	43.8	51.8	45.3	49.3	40.2	26.3	474.3
1990[2]	29.6	27.0	35.2	38.7	44.8	46.5	44.7	48.2	42.6	46.3			

[1] Does not necessarily agree with monthly figures; compiled from producers' annual reports and are final. [2] Preliminary. *Source: Bureau of Mines* T.73

Cheese

U.S. milk marketings in 1990 were forecast to be 145.6 billion pounds, compared with 142.2 billion in 1989. However, milk was expected to test very low for fat content in 1990. The fat content of milk in 1989 averaged 3.68 percent, up from 3.67 percent in 1988 and 3.65 percent in 1987. According to USDA, the fat content in 1989 was the highest in two decades. The high solids content led to high yields of manufactured dairy products and a heavy volume of cream.

Over the Jan.-Aug. 1990 period, total U.S. cheese production was 4.65 billion pounds, up from 4.36 billion in the year-earlier period. Production of American cheese during that time was 1.96 billion pounds, almost 8 percent more than in the corresponding 1989 period. Production of other cheeses was 2.11 billion pounds or nearly 9 percent more than in the like 1989 period. Cottage cheese output was 581 million pounds, down almost 4 percent from the Jan.-Aug. 1989 level.

Output of major dairy products on a milk-equivalent, milk-fat basis in June to August 1990 rose by almost 7 percent from a year earlier. Cheese production continued to take a large share of the milk supply. Over the first half of 1990 disappearance of American cheese was about 1.4 billion pounds, up slightly from a year before. Commercial use of other cheeses during the first half of 1990 increased by 9 percent to 1.67 billion pounds. In 1989, per capita consumption of American cheese was 11.3 pounds, of other cheeses-10.1 pounds, and of cottage cheese-4.1 pounds.

Commercial stocks of American cheese on a milk-equivalent basis on September 1, 1990 were 352 million pounds, up by nearly 19 percent from 1989. Commercial inventories of other cheese were 117 million pounds, about the same as in 1989. Government stocks of American cheese have been drawn down substantially. On September 1, they were only 4.6 million pounds, compared with 12 million in 1989 and 102 million in 1988.

During January to September 1990, the average price of cheddar cheese at Wisconsin assembly points was 143.8 cents per pound, well above 131 cents in the same period of 1989.

World cheese production in 1990 was forecast to reach 11 million tonnes, 3 percent higher than the previous year. Production increases were expected in the European Community (EC) and Eastern Europe. World cheese exports were projected to rise by over 5 percent. Exports by the EC were likely to reach a five-year high of 450,000 tonnes, while U.S. exports were headed for a five-year low of 7,000 tonnes. World cheese prices rose in 1988 and 1989, but declined in 1990.

World Cheese (Total[1]) Production In Millions of Metric Tons

Year	Argentina	Australia	Brazil	Canada	Mexico	Czechoslovakia	Denmark	France	West Germany	Italy	Netherlands	New Zealand	USSR	Sweden	Switzerland	United Kingdom	United States
1982	229	153	220	170	230	120	245	1,200	446	645	481	112	699	108	129	244	2,060
1983	245	158	200	183	230	123	249	1,245	446	656	485	114	744	115	135	244	2,186
1984	239	161	200	192	188	130	293	1,287	465	661	515	110	780	116	130	245	2,120
1985	210	160	205	213	187	131	253	1,300	495	684	522	118	809	109	126	260	2,305
1986	256	170	185	226	262	134	252	1,320	530	694	534	127	844	106	131	256	2,363
1987	277	177	195	246	298	142	271	1,342	553	704	552	113	861	107	128	263	2,424
1988	265	176	200	252	370	146	258	1,378	585	737	559	128	894	115	134	299	2,527
1989[2]	260	190	220	247	373	149	275	1,485	610	760	568	128	900	109	137	280	2,546
1990[3]	275	175	200	242	384	149	302	1,530	630	765	595	122	915	109	139	325	2,750

[1] Farm & factory production. [2] Preliminary. [3] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.75

Supply and Distribution of All Cheese in the United States In Millions of Pounds

	Supply						Distribution							
	Production							Gov't.				Domestic Disapp.		
Year	Whole Milk[2]	All Cheese[3]	Jan. 1 Commercial Stocks	Imports[4]	Total Supply	Cheese 40-Lb. Blocks Wisc. Assembly Points ¢ per lb.	Exports & Shipments[5]	Jan. 1 Stocks	Dec. 31 Stocks	Am. Cheese Removed by U.S.D.A. Programs	Total Disap.	Military	Civilian	Civilian Per Capita
1982	2,752	4,542	976	269	5,677	138.27	100	515	647	643	4,722	15	4,607	19.88
1983	2,928	4,820	1,064	286	6,171	138.28	87	647	793	833	4,905	18	4,798	20.52
1984	2,648	4,674	1,266	306	6,246	137.96	108	793	621	447.3	5,184	—5,076—		21.42
1985	2,855	5,081	1,062	303	6,441	127.72	125	621	544	629.0	5,501	—5,376—		22.47
1986	2,798	5,209	945	295	6,449	127.30	99	543.7	420	468.4	5,660	—5,560—		23.02
1987	2,717	5,345	789	265	6,399	123.19	89	420.1	81.2	282.0	5,937	—5,850—		24.01
1988	2,757	5,572	460	252	6,284	123.80	80	81.2	36.7	238.1	5,886	—5,806—		23.57
1989[1]	2,673	5,614	398	276	6,288	138.79	59	36.7	6.6	37.4	5,949	—5,900—		23.71
1990[6]	2,900	6,000	330			136.16		6.6		21.5	6,200			

[1] Preliminary. [2] Whole milk American cheddar. [3] All types of cheese except cottage, pot and baker's cheese. [4] Imports for consumption. [5] Commercial. [6] Estimate. *Source: Department of Agriculture* T.76

Cheese Production in the United States In Millions of Pounds

Year	American			Swiss, Including Block	Munster	Baick	Limburger	Neufchatel	Cream Cheese	Italian Varieties	Blue mold	All Other Varieties	Total of All Cheese[2]	Cottage Cheese		
	Whole Milk	Part Skim	Total											Low-Fat	Curd[4]	Creamed[5]
1981	2,642	5.9	2,664	214.4	67.4	13.9	1.2	—241.3—		994.4	30.2	66.6	4,278	208.3	647.5	773
1982	2,752	6.9	2,759	221.1	71.7	14.3	1.5	—262.8—		1,087.8	31.0	92.4	4,542	217.6	628.9	749
1983	2,928	4.1	2,932	209.5	69.6	14.2	1.1	—270.0—		1,200.2	31.5	90.6	4,820	215.9	618.2	743
1984	2,649	2.7	2,652	208.0	76.0	16.0	1.2	—276.5—		1,318.8	34.1	92.2	4,674	229.3	606.2	736
1985	2,855	2.4	2,857	222.9	82.1	20.1	1.0	—293.8—		1,491.3	33.3	77.7	5,081	244.4	598.8	716
1986	2,798	2.1	2,800	227.3	88.5	20.4	1.1	—321.5—		1,632.8	34.2	82.1	5,209	265.5	600.1	705
1987	2,717	.9	2,718	227.2	92.6	28.9	1.1	—342.2—		1,799.8	35.9	99.0	5,344	270.3	573.8	675
1988[1]	2,757	1.1	2,758	250.1	82.9	24.9	1.0	—375.8—		1,937.1	37.8	104.3	5,572	290.9	556.7	647
1989[3]	2,673	1.0	2,674	———— 2,940 ————									5,614			
1990[3]	2,900	———— 3,100 ————											6,000			

[1] Preliminary. [2] Excludes full-skim cheddar and cottage cheese. [3] Estimated. [4] Includes cottage, pot, and baker's cheese with a butterfat content of less than 4%. [5] Includes cheese with a butterfat content of 4 to 19%. *Source: Economic Research Service, U.S.D.A.* T.77

Wholesale Price of Cheese, 40-lb Blocks, Wisconsin Assembly Points In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1981	164.0	164.0	166.9	167.0	167.8	167.9	167.8	167.8	167.8	168.5	169.2	168.4	167.2
1982	168.4	168.4	168.4	168.4	168.4	168.4	168.4	168.4	168.3	168.6	168.6	168.6	168.4
1983[1]	139.3	138.4	138.0	137.6	137.4	137.4	137.0	137.1	139.2	140.7	140.7	136.7	138.3
1984	135.8	135.5	135.9	135.9	135.9	136.0	136.7	138.6	144.3	143.8	139.7	137.5	138.0
1985	136.5	134.3	132.1	129.9	128.0	126.8	124.7	124.3	124.3	124.3	123.8	123.9	127.7
1986	123.8	124.5	123.2	125.0	126.0	125.4	126.7	129.5	129.7	130.2	133.4	130.4	127.3
1987	127.8	122.5	122.3	122.4	122.0	122.0	123.2	125.5	126.6	121.9	121.3	120.8	123.2
1988	118.4	116.1	115.6	115.1	115.0	116.2	118.3	127.6	134.6	136.4	136.3	136.0	123.8
1989	129.1	117.6	117.9	120.4	123.9	130.8	140.6	143.3	155.8	160.3	163.6	162.2	138.8
1990	152.3	131.6	130.7	140.5	145.8	149.5	151.0	150.3	142.6	114.9	112.0	112.7	136.2

[1] Prices prior to Jan. 1983 are for American Cheese, fresh single daises at Chicago. *Source: Statistical Reporting Service, U.S.D.A.* T.79

United States Total Cheese Production[1] In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	342.8	317.8	374.1	379.5	394.2	390.9	353.0	340.6	334.4	343.4	334.1	372.7	4,278
1982	351.3	331.0	391.7	———1,203———			———1,121———			———1,143———			4,542
1983	384.8	359.3	425.3	413.1	439.4	444.7	402.1	381.3	373.0	391.9	389.3	415.4	4,820
1984	382.1	366.0	412.3	409.9	432.9	415.4	379.9	371.3	357.9	381.2	368.9	396.3	4,674
1985	395.0	361.5	416.0	435.3	461.1	447.2	443.8	427.3	403.6	432.9	415.4	441.8	5,081
1986	433.9	400.0	457.1	459.5	482.5	457.4	436.6	421.8	410.1	410.2	401.0	439.4	5,209
1987	422.0	398.6	457.4	462.1	477.8	465.6	453.8	426.0	430.7	448.6	431.8	469.7	5,344
1988	439.5	436.2	491.6	475.3	488.2	476.7	454.9	442.0	451.9	470.0	458.9	486.5	5,572
1989[2]	456.6	419.5	488.4	472.6	494.9	485.5	464.6	460.4	448.5	464.0	453.0	489.5	5,614
1990[2]	483.7	471.9	530.0	515.0	545.4	528.8	502.6	487.8	476.7	503.8	488.9		

[1] Excludes cottage and full skim American. [2] Preliminary. *Source: Statistical Reporting Service, U.S.D.A.* T.78

Cold Storage Holdings of All Varieties of Cheese in the U.S., on First of Month In Millions of Pounds[2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981	578.8	601.7	596.3	593.6	632.4	649.8	685.7	714.2	719.4	694.3	682.4	677.5
1982	709.6	711.7	696.4	722.4	—	—	803.9	—	—	864.3	—	—
1983	963.5	1,032	1,088	1,118	1,132	1,138	1,162	1,194	1,231	1,248	1,235	1,215
1984	1,205	1,201	1,220	1,217	1,182	1,208	1,193	1,186	1,148	1,115	1,078	1,044
1985	986.2	968.9	944.4	907.7	898.6	911.0	954.2	963.5	962.9	941.0	891.8	877.5
1986	852.9	835.8	813.2	815.7	838.4	873.3	892.8	915.6	916.2	859.0	805.0	757.0
1987	693.6	683.9	652.4	646.5	645.1	666.8	659.0	642.5	606.6	580.8	538.0	495.9
1988	457.1	455.1	448.3	443.8	451.9	460.1	480.9	496.1	460.8	421.3	400.7	366.7
1989[1]	388.1	395.3	404.4	396.6	412.1	431.9	429.6	430.4	419.8	370.2	331.4	330.6
1990[1]	328.0	360.1	378.3	395.8	411.0	432.1	461.6	480.1	471.3	456.5	444.0	424.9

[1] Preliminary. [2] Quantities are given in "net weight." *Source: Crop Reporting Board, U.S.D.A.* T.80

Chromite

A depressed global economy in 1990 put the breaks on the expanding ferrochromium industry. During the year, prices slid from quarter to quarter, many plants were shut down, and expansion projects were set aside for better times.

Prices started 1990 at 60 cents a pound for high-carbon grades, off sharply from mid-1989's high of just over 80 cents, and by the end of 1990 they were down to 39 cents. It was likely that 1991 production would also erode, if prices held at these lower levels. According to the trade, ferrochromium at prevailing prices was not profitable, and additional plant closures were expected.

The U.S. relies entirely on imports for its chromium needs. Because of this dependence, the U.S. government exempts chromium from the trade sanctions against South Africa. Chromium is used mostly in the form of ferrochromium in stainless steel production, and South Africa is the most abundant and low-cost source of ore.

During 1990, there was a continuation of the decade-long trend towards vertical integration in chromite-producing countries. In 1978, the U.S. imported 258,000 tonnes of chromium ore and 165,000 tonnes of chromium ferroalloy; in 1989, those totals were 162,000 tonnes of chromium ore and 208,000 of chromium ferroalloy.

The U.S. Bureau of Mines released data on domestic net import reliance as a percent of consumption. In 1989, the ratio was 78 percent, and in 1990 the figure was 79 percent.

Yugoslavia, one of the smaller chromite producers, was forced to shut down more than two-thirds of its ferrochromium production capacity in 1990. Other producers were expected to face hard choices in 1991.

In the first seven months of 1990, U.S. imports of chromite for consumption totaled 178,892 tonnes, compared with 1989's full-year 525,044 tonnes. Imports of ferrochromium in the same first seven months were 256,819 tonnes, versus 1989's full-year total of 343,732.

Domestic consumption of chromite ore in the first eight months of 1990 was 251,754 tonnes.

South Africa and the USSR are far and away the largest chromite mine producers with about 3.8 million tonnes of annual output each. Annual global ferrochromium production is estimated at 2.53 million tonnes, and the chief producer is South Africa with 692,000 tonnes, followed by the USSR with 276,000. The U.S. leads the world in production of chromium chemicals.

World Mine Production of Chromite In Thousands of Metric Tons[3] (Gross Weight)

Year	Albania	Brazil	Cuba	Finland	Greece	Iran	India	Madagascar	New Caledonia	Philippines	South Africa	Turkey	USSR	Yugoslavia	Zimbabwe	World Total[1]
1981	783	261	23	454	27	35	369	110		484	3,164	442	3,200		591	10,018
1982	744	304	30	380	32	45	401	49		355	2,680	499	3,240		476	9,348
1983	755	178	37	271	30	53	397	50		294	2,718	381	3,240		463	9,050
1984[3]	720	260	38	446	61	59	423	59	84	261	3,407	487	2,940		477	9,776
1985	825	190	38	506	59	56	565	127	79	272	3,699	589	3,360	10	536	10,945
1986	850	223	50	678	62	56	638	83	72	174	3,907	543	3,640	9	533	11,555
1987	830	191	52	543	64	56	624	107	62	188	3,847	600	3,570	13	570	11,355
1988[2]	750	240	55	700	63	56	759	107	70	190	4,245	625	3,700	12	561	12[illegible]67
1989[1]	700	225	55	750	65	56	800	107	66	190	3,800	650	3,800	12	570	[illegible]91
1990[1]	700	200		700			750	100		170	3,800	650	3,800		550	11,720

[1] Estimate. [2] Preliminary. [3] Data prior to 1984 are in thousands of short tons. *Source: Bureau of Mines* T.81

U.S. Salient Statistics of Chromite In Thousands of Metric Tons[7]

						Consumption by Primary Consumer Groups (Gross Weight)				Consumer Stocks, Dec. 31				$ Per Metric Ton	
Year	% Net Import Reliance of Apparent Consumption	Production of Chromium Metals[6]	Exports	Imports (For Consumption)	Reexports	Total	Metallurgical	Refractory	Chemical	Metallurgical	Refractory	Chemical	Total Stocks	South Africa[2]	Turkish[4]
1981	90		71	898	67	889	503	148	238	230	128	370	728	55	110
1982	85		8	507	57	558	283	80	195	120	113	313	546	52	110
1983	76		11	190	5	320	64	72	184	140	76	239	456	52	110
1984	80		55	305	4	512	226	97	189	24	70	233	327	52	110
1985[7]	75	100	91	376	3	508	449	59	[5]	228	44	[5]	272	42	125
1986	79	95	84	443	1	388	342	45	[5]	249	35	[5]	285	42	125
1987[1]	75	107	1	490	5	506	459	48	[5]	309	23	[5]	332	46	115
1988[3]	78	120	4	615	1	551	495	56	[5]	366	23	[5]	390	56	180
1989[3]	78	147	40	525	2	561	517	44	[5]	368	24	[5]	392	65	185
1990[3]	79	135	2	500		550							350	60	160

[1] Preliminary. [2] Cr_2O_3, 44% (Transvaal). [3] Estimate. [4] 48% $Cr_2$03. [5] Included in metalurgical. [6] Chomiom content. [7] Data prior to 1985 are in thousands of short tons. *Source: Bureau of Mines* T.82

Coal

U.S. coal production was expected to exceed 1 billion short tons for the first time in 1990 and to increase to 1.038 billion tons in 1991, according to the Department of Energy. U.S. coal consumption for 1990 was projected to range between 881 million and 904 million tons, regardless of the effects of the Kuwait crisis on oil prices, and was due to increase only modestly in 1991. Exports were projected at 100 million tons for 1990 and 102 million for 1991.

Coal consumption at electric utilities was sluggish in 1990, because of slower growth in electricity demand and expanded use of nuclear and hydroelectric generators. However, scheduled maintenance and refueling at nuclear plants were expected to increase coal use at electric utilities in 1991 to 803 million tons from 771 million.

The economy's weakness in 1990 reduced the demand for raw steel and, accordingly, total consumption of coking coal. However, coke production was about unchanged at 39 million tons in 1990 and was put at 41 million in 1991, as coke imports were expected to bear the brunt of the reductions.

Japan also was affected by the weakness in steel demand. In December 1990, Australian coking coal producers signed export contracts with Japanese steel mills for the fiscal year beginning April 1, 1991, at about a 2 percent discount to 1990 contract prices. Volumes were reported to be about unchanged to down 2 percent. The Japanese contracts are considered harbingers of overall coking coal demand.

World Production of All Coal[3] In Millions of Metric Tons

Year	Australia	East Germany	Canada	Czechoslovakia	Turkey	West Germany	Greece	India	Spain	China	Poland	South Africa	United Kingdom	United States	U.S.S.R.	Yugoslavia
1987	386	309	612	128	44	191	42	185	35	8,989	265	177	104	833	760	60
1988[1]	356	310	706	126	42	188	49	197	31	9,465	267	178	104	862	771	59
1989[1]		301	706	119	62	188	52	212	36	10,206	242	173	100	760	740	68

[1] Estimate. [2] Preliminary. [3] Includes anthracite, subanthracite, bituminous, subbituminous, lignite & brown coal. *Source: United Nations.* T.83

Bituminous Coal Production[1] in the United States In Millions of Short Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1988	75.4	76.8	84.0	75.4	74.0	76.4	69.2	88.2	83.3	80.9	83.0	80.3	946.7
1989[2]	82.0	75.1	89.1	77.2	82.5	78.5	66.4	91.0	84.8	89.6	87.0	74.1	977.4
1990[2]	90.3	81.8	91.4	83.4	86.6	84.7	80.9	93.2	84.3	95.7	88.9	77.4	1,032.7

[1] Includes small amount of lignite. [2] Preliminary. *Source: Bureau of Mines* T.88

U.S. Stocks of Bituminous Coal for All Industrial & Retail Dealers, at End of Month In Million Short Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1988	170.6	166.9	168.4	171.4	171.8	166.5	153.4	146.4	147.7	151.9	154.9	158.4
1989[1]	146.5	141.4	142.6	148.2	154.5	152.4		145.0	147.2	153.4	157.8	146.1
1990[1]	148.7	153.9	161.4	167.0	174.1	173.7						

[1] Preliminary. *Source: Bureau of Mines* T.87

Pennsylvania Anthracite Coal Production[1] In Thousands of Short Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1988	221	275	287	272	304	290	253	370	324	388	310	260	3,555
1989[2]	286	287	343	278	285	261	196	310	299	298	272	233	3,348
1990[1]	237	221	259	297	329	327	277	345	323	354	310	183	3,121

[1] Represents production in Pennsylvania only. Production outside which is small, is included in Bituminous Production series. [2] Preliminary. *Source: Bureau of Mines* T.92

Average U.S. Price of Coal In Dollars per Short Ton

	End-Use Sector						End-Use Sector				
Year	Electric Utilities	Coke Plants	Other Industrial[2]	Ex[3]ports	Im[3]ports	Year	Electric Utilities	Coke Plants	Other Industrial[2]	Ex[3]ports	Im-[3]ports
1984	35.12	56.58	39.29	50.72	35.37	1989	30.12	47.50	33.03	42.52	34.14
1985	34.53	54.30	37.21	48.18	36.04	1990[4]				42.63	34.45
1986	33.30	50.83	35.84	45.95	36.02	1991					

[1] Based on the cost including insurance & freight (C.I.F. cost). [2] Manufacturing plants only. [3] Based on the free alongside ship (F.A.S.) value. [4] Estimate. *Source: Energy Information Administration* T.90

COAL

Salient Statistics of the Bituminous Coal Industry in the United States

Year	Production: Underground (Millions Net Tons)	Production: Surface (Millions Net Tons)	Production: Total Production (Millions Net Tons)	Value: Total Million $	Value: Avg. Per Ton $	Number of Mines	Thous. of Men Employed	Avg. Tons Per Miner Per Hour: Underground	Avg. Tons Per Miner Per Hour: Surface	Avg. Tons Per Miner Per Hour: Total	Imports	All Coal[3] Exports to: Grand Total	All Coal[3] Exports to: Canada	All Coal[3] Exports to: Europe	All Coal[3] Exports to: Asia
											(Thousands of Short Tons)				
1982	338.6	495.0	833.5	22,621	27.14	5,363	214.4	1.37	3.48	2.14	742	105,244	18,205	51,211	29,957
1983	299.9	478.1	778.0	20,111	25.85	4,265	173.5	1.62	3.87	2.52	1,271	76,870	16,809	32,979	21,895
1984	351.5	540.3	891.8	22,750	25.51	4,902	175.7	1.72	4.10	2.65	1,286	80,793	20,140	32,766	21,306
1985	350.1	528.9	878.9	22,060	25.10	4,547	167.0	1.79	4.32	2.76	1,952	92,680	16,393	45,106	22,343
1986	359.8	526.2	886.0	20,998	23.70	4,203	152.7	2.00	4.69	3.04	2,212	85,518	14,478	42,552	19,639
1987	372.2	543.0	915.2	21,050	23.00	3,894	141.1	2.21	5.06	3.32	1,747	79,607	16,227	34,159	20,206
1988	381.5	565.2	946.7	20,827	22.00	3,654	133.9	2.38	5.41	3.58	2,134	95,023	19,232	45,137	23,075
1989[1]	393.3	584.1	977.4	21,268	21.76	3,429	130.1	2.46	5.70	3.73	2,851	100,815	16,777	51,604	22,734
1990[2]			1,033								2,699	105,804	15,511	58,382	22,725

[1] Preliminary. [2] Estimate. [3] Prior to 1985 data is just for bituminous coal. *Source: Energy Information Administration*

T.84

United States Production of Coal by Principal States In Millions of Short Tons

Year	Anthracite Pennsylvania	Bituminous: Alabama	Colorado	Illinois	Indiana	Kentucky	Montana	Ohio	Pennsylvania	Virginia	West Virginia	Texas	Wyoming	Total Bituminous	Total U.S.
1982	4.6	26.6	18.3	60.3	31.8	150.2	27.9	36.5	74.8	39.8	128.5	34.8	108.4	833.5	838.1
1983	4.1	23.8	16.7	56.8	31.8	131.2	28.9	33.8	65.7	35.0	115.0	38.9	112.2	778.0	782.1
1984	4.2	27.1	18.0	63.8	37.6	159.5	33.0	39.3	73.3	40.4	131.0	41.1	130.9	891.8	895.9
1985	4.7	27.8	17.2	59.2	33.3	152.3	33.3	35.6	66.7	40.9	127.8	45.5	140.7	878.9	883.6
1986	4.3	25.8	15.2	61.9	32.9	153.9	34.0	36.4	67.4	41.2	129.9	48.6	136.8	886.0	890.3
1987	3.6	25.5	14.4	59.2	34.2	165.2	34.4	35.8	66.9	44.5	136.7	50.5	146.9	915.2	918.8
1988	3.6	26.5	15.9	58.6	31.3	157.9	38.9	34.0	67.1	45.9	145.0	52.3	164.0	946.7	950.3
1989[2]	3.3	28.0	17.1	59.3	33.6	167.4	37.7	33.7	67.2	43.0	153.6	53.9	171.6	977.4	980.7
1990[1]	3.1	29.1	19.2	60.3	37.8	170.8	37.0	35.2	70.7	50.0	167.6	56.5	185.8	1,032.7	1,035.9

[1] Estimate. [2] Preliminary. *Source: Bureau of Mines*

T.85

U.S. Consumption & Stocks of Total Coal In Millions of Short Tons

Year	Stocks—Dec. 31: Electric Power Utilities	Oven Coke Plants	Steel & Rolling Mills	Other Industrials	Producers & Distrib.	Total	Consumption: Electric Power Utilities	Coke Plants: Beehive	Coke Plants: Ovens	Steel & Rolling Mills	Other Industrials	Retail Deliveries[2]	Total
1982	181.1	4.6	9.5		36.8	232.0	593.7	40.9		64.1		8.2	706.9
1983	155.6	4.3	8.7		33.9	202.6	625.2	37.0		66.0		8.4	736.7
1984	179.7	6.2	11.3		34.1	231.3	664.4	44.0		73.7		9.1	791.3
1985	156.4	3.4	10.4		33.1	203.4	693.8	41.1		75.4		7.8	818.0
1986	161.8	3.0	10.4		32.1	207.3	685.1	36.0		75.6		7.7	804.3
1987	170.8	3.9	10.8		28.3	213.8	717.9	37.0		75.2		6.9	836.9
1988	146.5	3.1	8.8		30.4	188.8	758.4	41.9		76.3		7.1	883.7
1989[1]	135.9	2.9	7.2		29.0	175.1	765.8	41.4		76.1		6.2	889.5
1990[3]	150	.3	8		32	200	800						900

[1] Preliminary. [2] To other consumers. (Residential & Commercial) [3] Estimate. *Source: Energy Information Administration*

T.86

Statistical Trends in the Pennsylvania Anthracite Industry

Year	Production (Millions of Net Tons): Total	Production: Surface	Production: Underground	Value of Production Million $	Avg. Value Per Net Ton	Stocks (Dec. 31): Electric Utilities	Stocks (Dec. 31): Prod. & Distrib.	Exports to: Total	Exports to: Canada	Exports to: France	Exports to: Netherlands	Exports to: South Korea	Apparent Consumption	Avg. No. of Men Working Daily (1,000)	Number of Mines	Avg. Tons Per Miner Per Hr.
						(1,000 Short Tons)										
1982	4.6	4.0	.6	229.3	49.85	6,080	672	980	316	57	—	550	3,349	2.7	220	.59
1983	4.1	[illegible]	.5	214.4	52.29	6,507	498	776	296	58	30	357	2,823	2.1	224	1.01
1984	4.2	3.6	.6	202.5	48.22	6,710	565	680	301	—	52	292	3,088	2.1	149	1.02
1985	4.7	4.0	.7	215.3	45.80	7,189	416	1,286	277	19	32	535	2,917	2.3	217	1.05
1986	4.3	3.7	.6	189.7	44.12	7,099	512	1,460	437	—	8	868	2,533	2.0	221	1.03
1987	3.6	2.9	.6	157.1	43.65	6,940	537	1,180	445	—	—	643	2,604	1.6	200	1.13
1988[1]	3.6	2.9	.6	159.0	44.16			901	506	—	—	266		1.5	206	1.21
1989[2]	3.3	2.8	.5	141.7	42.93									1.4	191	1.12

[1] Preliminary. [2] Estimate. *Source: Energy Information Administration*

T.91

Cobalt

Cobalt was in a major bull market during 1990, and its meteoric price rise was even more impressive because most of the other metals were in a downturn. Cobalt prices started the year at $8.00 a pound and soared to nine-year highs of $14.50 by the end of 1990. Political turmoil and short fabricator inventories were the reasons given for the market's advance, though trade skeptics were inclined to blame the rise on dealer and trader speculation.

Market analysts indicated that two Canadian cobalt producers, Inco and Falconbridge, sold out of inventory during the latter part of the year. Both firms are major nickel producers and supply cobalt as a byproduct. The firms announced earlier in the year that they were planning cutbacks in nickel production. As a result of this supply tightening, cobalt prices were expected to remain firm through 1991.

The U.S. produces no cobalt of its own and is dependent on outside sources to satisfy its needs. During the first half of 1990, reported domestic cobalt consumption decreased slightly from the level in the same period in 1989.

For the first six months of 1990, domestic cobalt consumption totaled 3,478 tonnes, compared with 3,577 tonnes in the first six months of 1989 and 7,065 in full-year 1989. Consumption of cobalt in superalloys topped the list, with 1,624 tonnes used in the first half of 1990, compared with 1,307 in the same period of 1989.

In the first five months of 1990, U.S. imports of cobalt material were 2,868 tonnes, compared with 12,363 for all of 1989. In early 1990, South Africa became the leading exporter of cobalt to the U.S. For the first five months of 1990, the U.S. imported 715 tonnes of all-cobalt content material from South Africa, or 25 percent of the total. Imports from South Africa shot up by over 4 percent in early 1990 from the corresponding year-earlier level.

Zaire and Zambia, formerly the chief suppliers of cobalt to the U.S., were third and fourth largest in the first five months of 1990, providing 16 percent and 15 percent of the imported metal, respectively.

In 1989, legislation was passed to give preferential treatment to a firm supplying cobalt from Norway, which is a trade preference nation, while Zaire and Zambia are not. Norway's exports to the U.S. totaled 359 tonnes, or more than 12 percent of the import market, in the first five months of 1990, compared with 10 percent in all of 1989. In 1989, Zambia accounted for nearly 27 percent of U.S. cobalt imports, and Zaire for over 14 percent.

World Mine Production of Cobalt In Metric Tons[4] of Cobalt Content

Year	Albania[3]	Australia[3]	Botswana	Brazil	Canada	Cuba[3]	Finland (Refinery)	France (Refinery)	Japan (Refinery)	New Caledonia[3]	Norway (Refinery)	Philippines[3]	South Africa	USSR	Zaire	Zambia	World Total
1982	900	1,631	559	N.A.	1,548	1,653	1,141	626	2,141	299	1,092	514	1,500	2,550	12,450	3,584	27,081
1983	1,000	1,270	491	260	1,459	1,787	1,709	144	1,511	440	969	182	1,500	4,850	5,908	2,653	19,935
1984	1,300	1,190	570	220	2,340	1,540	1,602	128	998	550	1,313	71	1,500	5,200	10,003	3,827	26,045
1985[4]	600	1,134	222	100	2,067	1,490	1,427	124	1,276	675	1,637	911	690	2,700	29,200	6,773	47,374
1986	600	1,237	163	150	2,297	1,553	1,348	158	1,338	700	1,574	92	690	2,800	33,373	5,869	50,199
1987	600	1,261	181	150	2,490	1,566	980	136	124	750	1,576	—	720	2,800	22,517	7,365	40,902
1988[2]	600	1,200	291	150	2,398	1,752	1,132	176	109	800	1,951	—	720	2,850	25,400	7,090	43,608
1989[1]	600	1,000	275	200	2,694	2,000	1,295	180	99	800	1,946	—	730	2,850	25,000	7,000	43,360
1990[1]	600	1,000			2,500	2,000				800				2,850	25,000	7,000	43,250

[1] Estimate. [2] Preliminary. [3] Metal content. [4] Data prior to 1985 are for short tons. *Source: Bureau of Mines*

T.93

U.S. Salient Statistics of Cobalt In Metric Tons of Contained Cobalt

					Consumption By End Uses											
Year	Net Import Reliance as a % of Apparent Consumption	Cobalt Secondary Production	Processors & Consumer Stocks Dec. 31	Imports for Consumption	Ground Coat Frit	Stainless & Heat Resisting	Catalysts	Super-Alloys	Tool Steel	Magnetic Alloys	Pigments	Drier in Paints, etc.[4]	Cutting & Wear-Resistant Mater.	Feed or Nutritive Additive	Total (Apparent)	Price $ Per Pound[3]
1982	92	2,863	1,327	12,870		51	789	3,319	161	1,544		1,114	638		9,468	8.56
1983	95	3,232	1,441	17,221		54	1,064	4,034	248	1,711		1,503	666		11,319	5.76
1984	95	3,499	1,368	25,310		74	1,296	4,766	353	2,209		1,258	831		12,994	10.40
1985[5]	94	407	1,273	8,032	328	28	497	2,418	92	660	182	517	566	21	7,118	11.43
1986	84	1,196	1,355	5,574	350	34	656	2,924	116	699	210	674	518	21	7,649	7.49
1987	87	1,025	2,043	8,832	360	26	497	2,873	174	666	258	799	654	24	7,986	6.56
1988[1]	87	1,018	1,766	7,051	332	26	617	2,887	180	869	378	892	704	26	7,824	7.09
1989[2]	83	1,184	1,439	5,793	352	74	819	2,813	219	861	319	718	654	35	7,164	7.64
1990[2]	85	1,150	1,400	7,400											7,850	10.00

[1] Preliminary. [2] Estimate. [3] Annual spot for cathodes. [4] Or related usage. [5] Data prior to 1985 are for thousands of pounds. *Source: Bureau of Mines*

T.94

Cocoa

A gloomy assessment of the 1990/91 cocoa situation came right at the time that this overburdened market made 16-year lows. After spending the first weeks of 1990 at this dismal point, the London futures price gained more than 250 stg. a tonne (from 622 stg. to 892 stg.) in two short months. The rally was ignited by political unrest in the Cote d'Ivoire, and the resultant move off of the bottom attracted fund buying in cocoa futures.

However, the cocoa market has a problem; there's too much of it around. High prices always bring product to market, and there is little evidence that low prices have dampened output. In 1990/91 (Oct.-Sept.), world cocoa bean production was forecast at 2.39 million tonnes, almost equal to the previous year's crop and 3 percent below the record of 2.47 million in 1988/89.

Cocoa is produced in thirty-five countries with four main producers accounting for almost 70 percent of the total. The world's largest cocoa producer is the Cote d'Ivoire, with an estimated 720,000 tonnes in 1989/90. Next was Brazil with 362,000 tonnes, followed by Ghana with 295,000, and Malaysia with 240,000.

Malaysia is the world's fastest growing cocoa producer. In the past five years, its output almost doubled from 131,000 tonnes in 1985/86 to 240,000 in 1990/91. Until recently, Malaysia flatly refused to join the International Cocoa Organization (ICCO), but in 1990 in negotiations concerning Brazil's entry into the Tin Producers Council, Malaysia indicated a willingness to reconsider ICCO membership.

It is difficult to stem the tide of strong production, and global cocoa stocks are estimated to have reached 1.5 million tonnes in 1990. This is equal to about an eight-month supply at current annual grinding rates.

In 1989/90, world cocoa grindings rose by over 6 percent to 2.21 million tonnes from the previous year's 2.07 million. The gain reflected a trend of an increasing world grind each year since 1982/83. However, closing stocks have gained each year since 1983/84. The 1990/91 season also marks the seventh consecutive one in which current-year production has exceeded consumption.

The world's largest cocoa consumer is Germany. When the grind figures for what was West Germany (261,000 tonnes) and East Germany (21,000 tonnes) are combined, the total German cocoa grind is 282,000 tonnes. This is followed by the U.S., with a total grind of 260,000 tonnes, the Netherlands with 244,000, and the USSR with 170,000. Brazil, the world's largest producer and grinder of cocoa beans, ground 220,000 tonnes in 1990. It was followed by Cote d'Ivoire with 103,000 tonnes and Malaysia with 77,000.

Until 1990, the ICCO had an economic function involving the purchase and sale of cocoa into the market at certain price levels. With 250,000 tonnes in his possession, the ICCO Buffer Stock Manager had the potential to be a key market factor.

At the ICCO meeting in 1990, the international agreement was extended for two years, until September 1992. The buffer stock would continue to exist, but the manager would not intervene in the market to stabilize prices. This effectively took away the upper price cap, and the market showed a favorable response to that decision.

For many years the financing of the ICCO was a divisive issue that threatened the existence of the organization. Money was raised through a $30 a tonne levy against shipped cocoa, but most members either underpaid or didn't pay at all. As of April 15, 1990, that levy was abolished and a total budget of $15 million for buffer stock maintenance was declared. This amount is only enough to finance the buffer stock for one year, and additional funds will be raised through the payment of arrears.

It was expected that in 1991 the market would still have to fight its way through the heavy stocks overhang. Cocoa prices were likely to remain under pressure in the coming years. It will take years to move out marginal producers and cause a drawdown of stocks to the point where the market can sustain a long-term rally.

Futures Markets

Cocoa futures are traded on the Coffee, Sugar, and Cocoa Exchange (CSCE) in New York and on the London Terminal Market. Options are traded on the CSCE and the London Futures and Options Exchange.

World Cocoa Supply and Demand In Thousands of Metric Tons

Crop Year[1]	Stocks Oct. 1	Net World Crop[2]	Total Availability	Seasonal Grindings	Closing Stocks	Stock Change
1979–0	408	1,610	2,018	1,489	529	+121
1980–1	529	1,643	2,172	1,598	574	+ 45
1981–2	574	1,717	2,291	1,592	699	+125
1982–3	699	1,508	2,207	1,630	577	−122
1983–4	667	1,526	2,193	1,712	481	−186
1984–5	481	1,940	2,421	1,848	573	+ 92
1986–7	646	1,982	2,628	1,911	717	+ 71
1987–8	717	2,196	2,913	1,997	916	+199
1988–9	916	2,462	3,378	2,122	1,256	+340
1989–90[3]	1,256	2,411	3,667	2,193	1,473	+218
1990–1[4]	1,473	2,417	3,890	2,277	1,613	+140
1991–2[4]	1,613					

[1] Crop year season is Oct.–Sept. [2] The Net World Crop is obtained by adjusting the Gross World Crop for one percent loss in weight. [3] Preliminary. [4] Forecast. *Source: Gill and Duffus, Ltd.*

T.95

World Production of Cocoa Beans in Principal Producing Countries In Thousands of Metric Tons

Crop Year (Oct.–Sept.)	Brazil	Cameroon	Colombia	Dominican Rep.	Ecuador	Equatorial Guinea[1]	Ghana	Indonesia	Ivory Coast	Malaysia	Mexico	Papua New Guinea	Nigeria	Sierra Leone	Togo	Venezuela	World Total
1980–1	351	120	36	33	85	8	258	13	417	49	30	27	160	10	16	14	1,694
1981–2	315	120	39	43	88	8	225	17	465	61	41	29	183	9	11	15	1,737
1982–3	339	106	40	43	55	9	179	20	360	68	34	29	160	10	10	15	1,545
1983–4	309	109	41	42	55	9	159	23	411	90	35	28	125	9	21	12	1,545
1984–5	415	120	42	39	128	9	175	32	565	100	42	31	170	11	7	11	1,967
1985–6	380	119	46	39	112	9	219	40	555	130	39	33	130	9	13	11	1,952
1986–7	365	123	52	45	77	7	228	50	620	167	38	34	100	8	16	14	2,012
1987–8	400	133	54	50	76	8	187	60	674	227	48	35	145	9	12	13	2,202
1988–89	334	124	56	44	82	7	301	95	849	225	41	48	160	8	10	12	2,468
1989–90[3]	355	117	58	58	92	8	295	110	710	250	39	40	155	8	12	13	2,392
1990–91[2]	375	120	60	52	88	8	270	120	690	275	39	40	150	8	10	13	2,390

[1] Includes Fernando Po & Rio Muni. [2] Forecast. [3] Preliminary. *Sources: Foreign Agricultural Service; U.S.D.A.* T.96

World Absorption (Consumption) of Cocoa[2] In Thousands of Metric Tons

Crop Year	Japan	Singapore	Belgium	Brazil	Canada	China	Colombia	France	W. Germany	Netherlands	Spain	Italy	Switzerland	USSR	United King.	United States	World Total
1980	25	4	23	200	12	15	31	48	158	133	35	34	17	130	65	142	1,512
1981	29	4	29	195	17	15	35	52	167	141	37	35	18	120	85	190	1,600
1982	32	28	29	170	16	15	38	52	175	148	37	39	18	130	88	199	1,607
1983	34	20	33	198	16	10	39	53	180	157	38	36	18	145	77	194	1,656
1984	34	23	36	214	22	12	33	52	194	161	35	40	19	150	90	209	1,753
1985	34	29	36	247	21	7	39	42	207	167	39	47	20	155	91	205	1,857
1986	36	38	35	236	20	27	41	39	201	183	39	40	20	163	87	200	1,879
1987	39	45	35	236	21	16	46	40	225	215	43	46	19	132	100	241	1,997
1988	40	45	41	201	22	18	41	44	244	234	40	46	22	201	112	238	2,122
1989[1]	41	49	50	226	24	19	47	59	273	241	44	51	22	106	120	275	2,193
1990[3]	43	49	52	238	25	19	48	62	305	256	46	50	23	80	129	288	2,277

[1] Preliminary. [2] Figures represent the "absorption," "disappearance" or "grindings" of cocoa beans in each country—in other words, net imports of cocoa beans adjusted for changes in stock. [3] Estimate. *Source: Gill & Duffus, Ltd.* T.98

Raw Cocoa Grindings in Selected Countries In Thousands of Metric Tons

Year	Total	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
			France					Germany (West)					Holland		
1980	43.1	12.5	10.9	9.1	10.7	151.2	40.2	35.4	32.9	42.6	132.6	35.1	31.4	29.5	36.7
1981	47.0	12.6	12.0	9.6	12.9	159.4	41.7	37.6	35.4	44.7	141.0	36.0	34.3	32.7	38.0
1982	45.5	13.1	12.3	9.7	10.4	167.0	45.1	39.9	35.8	46.3	148.4	38.4	34.9	33.7	41.3
1983	47.6	12.2	12.9	10.9	11.7	179.5	45.7	41.0	43.0	49.8	156.9	40.5	37.9	35.2	43.4
1984	47.2	14.0	12.5	11.1	9.7	193.5	49.9	48.6	42.4	52.6	161.4	44.4	40.0	35.0	42.1
1985	42.5	12.4	10.6	8.3	11.2	206.8	57.0	51.7	44.0	54.0	167.4	44.6	41.7	37.0	44.1
1986	39.4	10.9	10.6	8.2	9.7	201.0	53.6	50.6	42.6	54.2	182.6	46.2	45.1	40.3	51.0
1987	37.8	9.9	9.0	9.2	9.7	208.7	55.2	49.2	46.4	57.8	195.6	49.1	47.3	42.8	56.3
1988	37.1	10.0	8.6	8.8	9.8	232.8	60.0	54.0	53.0	65.8	216.5	56.1	51.7	50.5	58.2
1989[1]	46.0					246.0	62.0	59.2	57.0	67.8	233.5	61.1	56.4	55.1	60.9
1990															
			Italy					United Kingdom					United States		
1980	33.8	8.0	8.4	8.1	9.3	65.3	15.5	16.1	15.5	18.2	142.2	33.5	31.5	34.9	42.4
1981	35.1	8.6	8.1	5.8	12.6	85.3	21.7	21.3	19.2	23.1	190.2	48.4	46.0	48.8	47.1
1982	39.2	9.6	10.1	6.0	13.6	88.1	25.3	21.1	19.6	22.1	199.1	47.7	50.6	50.1	50.7
1983	36.4	8.4	7.9	8.1	12.0	76.7	19.8	18.1	17.4	21.3	193.6	45.9	46.7	47.8	53.2
1984	39.8	8.0	5.6	9.8	16.5	89.6	22.3	21.9	21.1	24.2	164.4	42.4	41.6	40.9	39.5
1985	47.4	11.1	10.5	8.8	17.0	91.3	26.5	24.5	20.0	20.3	153.8	39.0	37.5	40.5	36.8
1986	39.8	10.9	9.1	7.8	12.0	87.2	21.1	22.0	20.1	24.0	153.6	33.8	37.0	42.3	40.6
1987	44.2	11.3	9.8	9.9	13.2	95.1	24.5	22.9	22.4	25.3	180.8	39.7	45.9	49.9	45.4
1988	46.9	11.8	10.1	11.3	13.7	100.5	26.3	25.0	22.4	26.8	186.9	45.2	47.3	48.4	46.0
1989[1]		9.8	11.3	11.2		114.6	28.5	30.1	26.9	29.2	190.4	42.1	48.5	47.0	52.8

[1] Preliminary. *Source: Gill and Duffus, Ltd.* T.97

COCOA

Imports of Cocoa Butter—Selected Countries In Metric Tons

Year	Greece	Australia	Austria	Belgium	Canada	Finland	France	West Germany	Italy	Japan	Netherlands	Norway	Sweden	Switzerland	UK	USA	USSR
1980	1,689	4,532	2,485	12,388	3,717	2,057	14,285	22,790	1,211	6,264	16,445	1,855	4,155	9,117	29,597	34,658	—
1981	1,633	4,410	3,461	11,960	4,505	2,228	14,170	29,358	1,667	10,352	11,021	1,875	4,234	10,208	19,549	43,196	—
1982	1,859	5,419	3,382	12,281	4,860	2,333	14,008	30,564	1,631	10,615	16,225	2,083	4,451	9,982	25,820	37,325	—
1983	1,788	6,067	3,535	12,128	5,313	2,428	16,690	30,581	2,151	9,947	20,224	1,892	4,704	10,224	31,581	47,981	
1984	1,561	6,445	3,763	13,451	5,437	2,156	17,325	35,241	2,337	8,436	25,072	2,139	5,103	9,798	30,203	51,711	4,200
1985	1,225	8,538	3,682	15,416	5,535	2,039	19,908	33,378	3,056	8,632	24,595	1,957	4,929	11,175	31,372	70,146	7,150
1986	1,457	8,204	4,387	13,793	5,377	1,966	19,397	25,513	3,246	8,474	14,925	2,295	4,866	11,369	32,669	70,264	3,450
1987	1,860	8,370	3,879	14,312	5,833	1,971	23,704	27,436	3,509	9,330	16,152	2,734	5,272	11,932	29,689	79,773	1,000
1988	2,812	9,405	4,315	12,869	7,371	2,246	24,562	33,590	4,731	12,497	20,431	2,523	5,596	12,821	34,329	78,285	N.A.
1989[1]	2,806	9,700	4,599	17,748	8,224	2,469	26,597	41,765	5,932	15,280	22,924	2,706	5,735	16,276	35,045	64,353	2,500
1990[2]																	

[1] Preliminary. [2] Estimate. *Source: Gill & Duffus Group PLC*

T.97a

Imports of Cocoa Liquor and Cocoa Powder (Selected Countries) In Metric Tons

Year	Cocoa Liquor							Cocoa Powder								
	France	West Germany	Netherlands	Japan	UK	USA	USSR	Belgium	France	West Germany	Italy	Japan	Netherlands	Sweden	UK	USA
1979	15,872	795	4,136	2,129	4,784	47,828	5,000	3,642	4,368	10,846	5,266	2,215	2,970	2,656	1,747	64,080
1980	15,688	1,922	7,634	2,927	1,928	43,796	5,200	3,335	5,905	10,693	6,142	2,656	3,018	3,457	1,885	65,606
1981	15,457	2,151	9,262	3,499	1,914	33,109	16,000	3,503	7,963	12,935	6,478	2,616	3,255	3,551	2,393	77,879
1982	13,871	2,196	13,519	3,684	2,283	31,419	8,700	3,770	7,609	13,524	6,673	2,832	2,974	3,872	3,284	60,563
1983	15,164	2,288	14,216	4,303	3,829	45,477	15,425	3,895	8,527	13,886	7,964	3,157	3,009	3,806	3,014	78,968
1984	20,268	3,075	13,622	2,928	2,184	45,547	32,000	4,204	9,652	13,554	7,462	3,260	3,574	3,996	3,654	89,978
1985	24,031	3,570	14,822	2,792	3,400	53,042	37,510	4,586	8,269	16,624	8,313	3,841	4,669	3,928	2,591	81,775
1986	28,426	2,006	10,915	3,346	4,091	50,705	30,110	4,844	8,984	15,654	9,059	4,844	4,669	3,980	3,258	89,454
1987	31,171	391	8,805	3,402	1,870	38,105	21,680	5,229	8,967	16,989	9,330	5,517	3,624	3,982	3,897	103,455
1988	31,157	793	9,014	3,445	3,022	34,454	21,000	5,572	9,750	16,453	9,498	6,470	3,432	4,330	3,576	91,357
1989[1]	29,257	1,040	9,315	3,451	2,524	27,556	31,504	6,138	10,920	18,470	10,233	6,281	5,862	4,081	3,255	53,736
1990[2]																

[1] Preliminary. [2] Estimate. *Source: Gill & Duffus Group PLC*

T.97b

United States Imports of Cocoa (Includes Shells) In Thousands of Metric Tons[2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.	Total
1980	11.1	9.2	8.0	19.5	15.4	12.0	16.9	9.6	8.2	9.6	9.4	19.9	148.5
1981	13.5	27.8	19.2	30.4	27.1	24.1	19.3	22.0	20.3	24.1	5.8	11.5	245.0
1982	10.0	29.0	17.6	15.3	16.8	11.9	13.0	20.3	14.3	14.4	14.4	17.4	194.2
1983	46.0	42.7	19.0	36.4	14.4	11.1	9.6	7.2	6.1	5.3	7.7	8.2	213.7
1984	15.5	21.3	28.7	16.9	24.7	15.3	13.3	10.8	10.4	5.0	10.8	18.2	190.9
1985[2]	42.9	44.4	39.7	10.1	31.0	15.8	14.1	12.7	11.1	10.4	12.8	25.4	270.4
1986	29.9	17.4	15.3	9.4	19.3	16.4	21.5	22.9	12.0	7.9	15.1	17.5	204.7
1987	26.5	28.4	23.2	31.0	20.9	10.4	10.8	14.2	5.7	22.5	24.3	44.6	262.6
1988	27.4	30.5	27.1	18.6	14.9	21.3	14.6	19.8	8.9	8.7	13.7	31.0	236.7
1989[1]	44.2	24.0	30.4	28.9	24.6	18.4	18.1	23.4	14.0	20.4	9.5	10.4	266.1

[1] Preliminary. [2] Prior to 1985 data are in thousands of long tons. *Source: Department of Commerce*

T.102

Bahia (Brazil) Crops In Thousands of Bags of 60 Kilos

Year	Total Crop Brazilian Crop Year	Temporao Brazilian Crop Year	Main Crop (Oct.–Apr.)	Temporao International Crop Year	Total Crop International Crop Year	Year	Total Crop Brazilian Crop Year	Temporao Brazilian Crop Year	Main Crop (Oct.–Apr.)	Temporao International Crop Year	Total Crop International Crop Year
1979–80	5,387	3,129	2,257	2,383	4,640	1985–86	6,027	3,126	2,901	2,774	5,674
1980–81	5,041	2,383	2,658	2,892	5,550	1986–87	6,623	2,774	3,849	1,546	5,395
1981–82	4,609	2,892	1,718	3,170	4,888	1987–88	4,993	1,546	3,448	2,485	5,933
1982–83	5,284	3,170	2,114	3,084	5,198	1988–89	5,243	2,485	2,758	2,228	4,986
1983–84	5,876	3,084	2,792	1,786	4,578	1989–90[1]	5,366	2,228	3,138	2,228	5,366
1984–85	5,030	1,786	3,244	3,126	6,370	1990–91[2]		2,100			

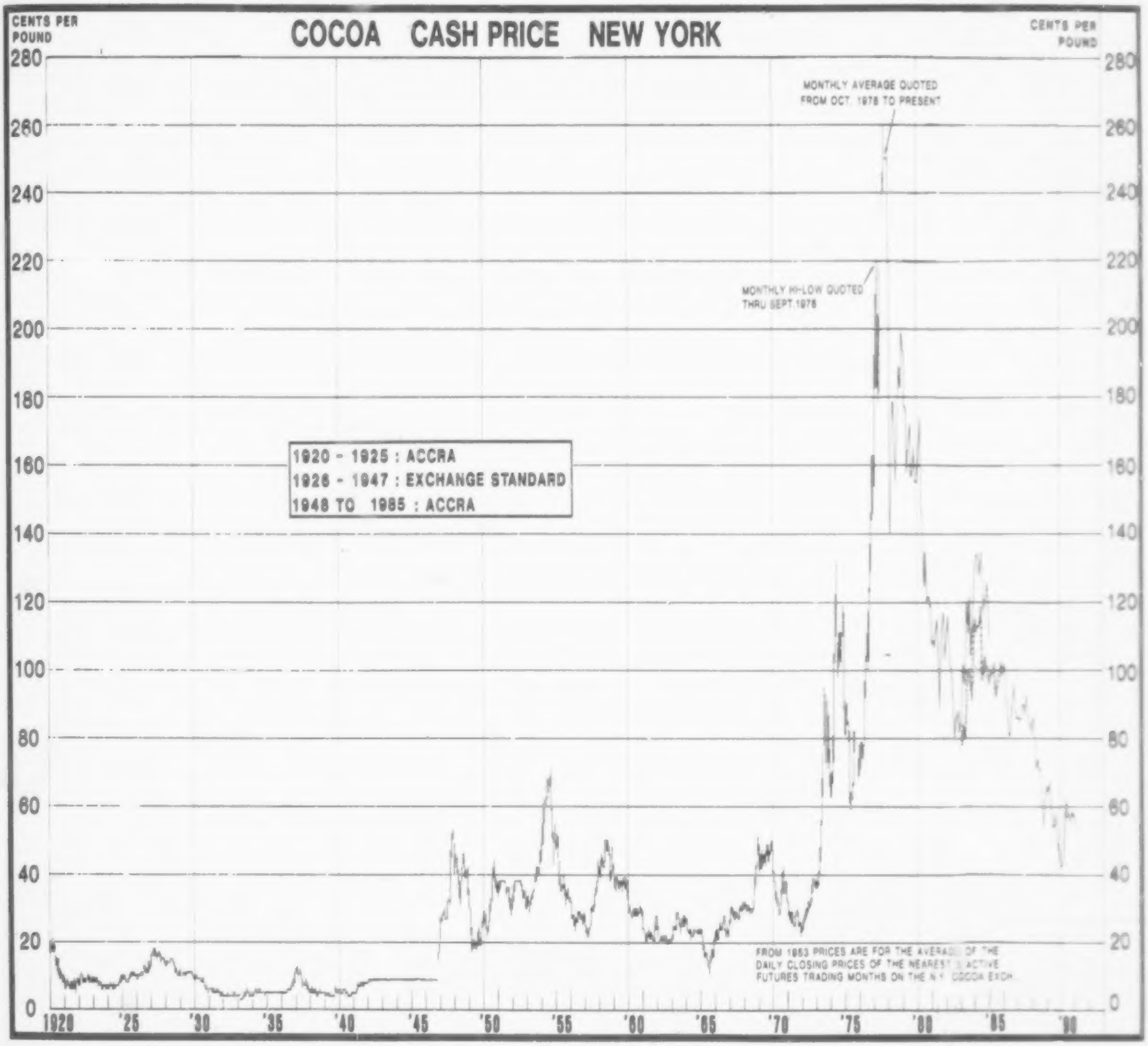
[1] Preliminary. [2] Estimate. *Source: Gill & Duffus Group PLC*

T.102a

New York Cocoa Bean Futures[1] Prices In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1980	139.1	142.4	136.0	127.9	113.5	108.6	106.2	99.3	103.6	100.9	93.7	91.2	113.5
1981	92.1	88.8	92.5	91.6	82.6	69.6	88.0	96.5	100.6	94.8	88.3	91.7	89.8
1982	95.6	89.6	83.8	75.2	73.3	66.2	66.1	66.0	71.6	70.8	64.8	69.6	74.4
1983	77.6	83.9	80.1	81.4	89.8	99.8	99.6	99.7	93.0	91.3	97.1	112.0	92.1
1984	115.2	110.8	113.0	112.8	118.8	108.2	97.1	98.6	104.3	99.8	100.6	95.5	106.2
1985	98.3	100.0	98.9	101.6	96.1	91.5	95.7	98.2	101.3	102.5	97.9	102.0	98.7
1986	100.6	95.5	91.0	84.9	81.4	81.4	87.6	89.1	95.6	90.6	87.4	85.6	89.2
1987	86.1	84.8	87.2	89.9	89.8	87.0	92.9	88.7	87.1	83.9	84.2	82.1	87.0
1988	86.3	77.9	72.6	71.2	74.3	70.9	71.2	63.1	54.0	57.7	64.4	65.9	69.1
1989	63.7	68.1	64.1	57.6	54.3	54.4	58.0	55.4	48.9	45.7	43.6	42.3	54.7
1990	43.6	45.2	49.9	58.5	63.2	57.3	58.3	55.4	59.4				

[1] Avg. of the daily closing price of the nearest 3 active futures trading month converted to ¢ per lb. *Source: N.Y. Cocoa Exchange* T.105



COCOA CASH PRICE NEW YORK

MONTHLY AVERAGE QUOTED FROM OCT. 1978 TO PRESENT

MONTHLY HI-LOW QUOTED THRU SEPT. 1978

FROM 1953 PRICES ARE FOR THE AVERAGE OF THE DAILY CLOSING PRICES OF THE NEAREST 3 ACTIVE FUTURES TRADING MONTHS ON THE N.Y. COCOA EXCH.

COCOA

Visible Stock of Cocoa in Philadelphia (Delaware River) Warehouses, at End of Month In Ths. of Bags

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1985	221.3	282.0	333.6	420.9	416.4	389.1	315.9	323.9	320.7	316.3	289.1	280.6
1986	281.3	276.4	258.8	255.8	237.9	201.3	208.7	182.0	209.5	[illegible]37.1	136.7	188.5
1987	209.8	210.8	228.9	224.1	243.6	276.2	291.4	259.7	236.6	177.9	189.6	206.3
1988	164.6	149.2	154.9	211.1	227.3	232.0	238.1	193.3	185.5	157.6	123.4	112.0
1989	86.0	67.5	88.7	96.2	114.0	112.5	100.3	100.0	54.6	46.1	51.9	53.5
1990	35.1	61.1	87.5	107.9	120.5	204.4	297.1	231.2	185.9	193.0	195.3	215.1
1991	216.2	226.9										

Source: Coffee, Sugar & Cocoa Exchange, Inc. T.107

Visible Stock of Cocoa in New York Warehouses[1], at End of Month In Thousands of Bags

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1985	34.7	22.0	13.2	36.4	167.8	170.9	161.3	155.7	164.6	150.6	131.8	107.1
1986	99.2	96.9	95.6	89.7	87.4	90.3	88.9	103.6	102.1	87.5	70.6	59.9
1987	51.9	43.5	40.0	39.4	55.2	46.1	58.7	43.5	49.4	44.8	107.7	149.1
1988	138.7	115.4	100.1	96.8	102.8	135.4	140.8	146.8	114.3	105.8	73.7	59.8
1989	65.0	81.9	47.3	82.2	214.8	245.3	274.2	215.6	181.3	247.7	313.6	293.5
1990	288.4	267.5	311.9	335.3	294.8	359.2	431.3	409.0	442.2	406.3	413.4	397.2
1991	355.6	219.6										

[1] In licensed & unlicensed warehouses of storage companies licensed by the Coffee, Sugar & Cocoa Exch. *Source: Coffee, Sugar & Cocoa Exch.*

U.S. Spot Cocoa Prices for Selected Origins of Cocoa Beans and Products (Dollars per metric ton)

	Cocoa Beans					Chocolate Liquor		Cocoa Butter		Cocoa Cake
Crop Year (Oct.–Sep.)	Ivory Coast	Malaysia	Brazil	Dominican Republic	Ecuador	Ecuador	Brazil	African	Other	10–12% Fat
1984/85	2,433		2,407	2,197	2,239	2,784	2,919	5,331	5,276	951
1985/86	2,281		2,207	2,020	2,048	2,552	2,720	4,940	4,897	825
1986/87	2,155		2,087	1,942	1,975	2,554	2,634	4,643	4,608	965
1987/88	1,952		1,807	1,664	1,700	2,216	2,280	4,001	3,919	916
1988/89	1,773	1,364	1,669	1,442	1,466	1,912	2,136	3,543	3,515	945
1989/90	1,307	1,162	1,259	1,142	1,250	1,640	1,775	3,176	3,151	666
Aug. '90	1,358	1,208	1,315	1,160	1,273	1,767	1,855	3,371	3,365	591
Sept. '90	1,463	1,290	1,406	1,253	1,360	1,886	1,986	3,652	3,643	617

Source: The Cocoa Merchants Association. All prices are nominal net ex-dock or ex-warehouse, U.S. Eastern seaboard North of Hatteras, for merchandise physically available in interstate commerce, in truckload quantities, regular commercial quality. *Foreign Agricultural Service*

Average Open Interest of Cocoa Futures at New York In Contracts

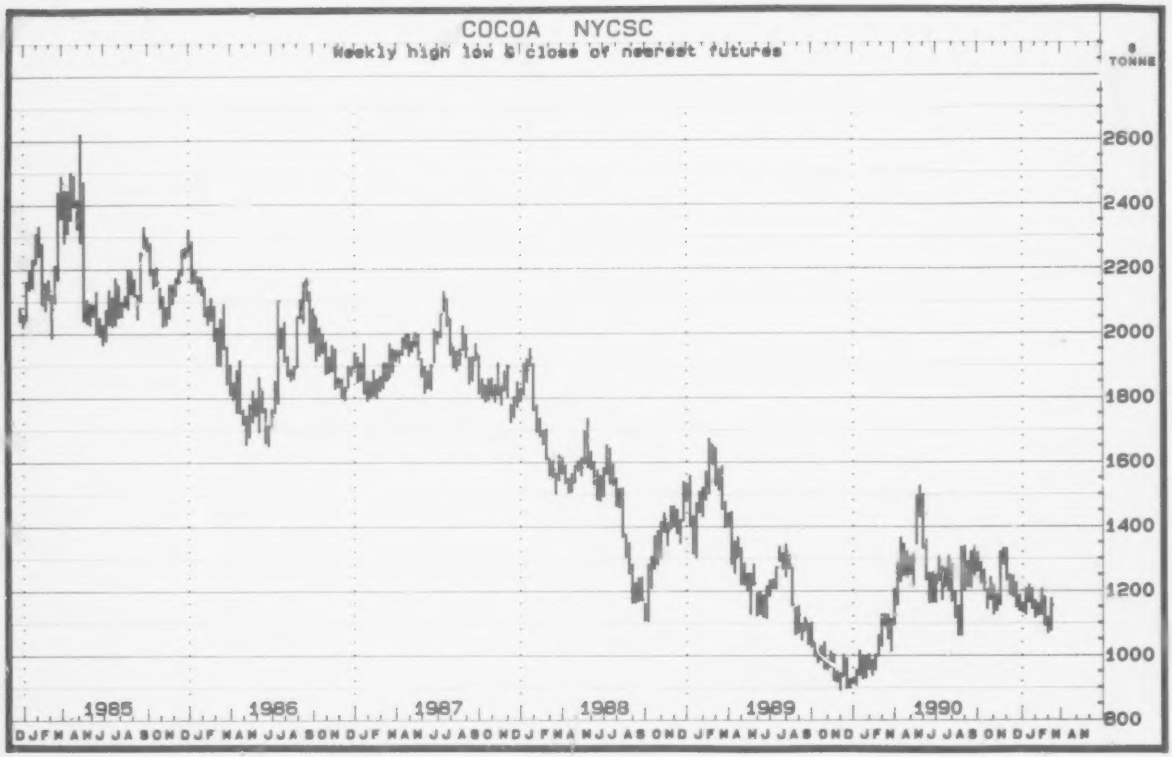
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.
1985	23,224	24,349	26,565	26,226	21,935	21,122	21,242	19,817	19,891	20,736	19,636	17,778
1986	18,507	19,543	20,841	21,267	22,520	23,172	24,287	24,376	25,795	24,769	23,678	24,576
1987	25,412	23,578	24,541	23,372	24,869	26,115	32,859	32,063	30,946	32,643	29,666	27,674
1988	27,704	28,713	32,178	33,589	35,239	36,444	37,772	38,841	38,762	38,222	37,834	36,697
1989	36,747	35,492	32,917	36,597	41,341	45,016	47,222	45,700	42,731	46,366	48,062	49,553
1990	52,094	52,599	55,796	51,299	51,076	50,385	49,603	49,083	47,332	50,084	44,944	41,955
1991	42,446	38,205										

Source: Coffee, Sugar & Cocoa Exchange, Inc. T.103

Volume of Trading of Cocoa Futures at New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1985	86,748	83,988	94,863	72,564	64,716	62,989	74,583	57,842	52,912	58,358	53,056	37,954	800,573
1986	52,774	61,836	70,859	74,249	57,525	77,335	79,029	65,963	75,673	64,729	54,090	43,703	777,765
1987	67,268	61,641	73,341	67,954	68,521	93,849	111,728	66,990	71,591	70,164	81,605	60,813	895,465
1988	84,590	83,826	92,644	85,144	111,277	121,184	128,859	106,031	87,684	137,635	142,016	87,160	1,268,050
1989	138,883	122,374	116,082	132,208	135,783	129,943	98,922	137,879	73,741	95,531	101,152	59,352	1,341,850
1990	121,610	128,357	166,277	191,007	194,759	181,377	126,596	143,323	75,757	120,689	116,175	69,990	1,635,917
1991	94,609	92,450											

Source: Coffee, Sugar & Cocoa Exchange, Inc. T.104



High, Low & Closing Prices of March Cocoa Futures at New York In Dollars per Tonne

Year of Delivery		Year Prior to Delivery											Delivery Year			Life of Delivery Range
		Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	
1984	High	2015	1958	1990	2325	2390	2460	2440	2195	2124	2272	2759	2805	2626	2645	2805
	Low	1785	1790	1780	1895	2070	2055	2080	1907	1953	1967	2175	2353	2355	2425	1653
	Close	1838	1835	1990	2168	2224	2369	2113	2089	1989	2224	2755	2521	2462	2617	—
1985	High	2455	2510	2500	2560	2430	2234	2305	2350	2248	2291	2133	2309	2332	2210	2602
	Low	2240	2350	2343	2401	2230	1998	1990	2150	2118	2056	2034	2018	2071	1985	1985
	Close	2363	2489	2435	2401	2280	2000	2275	2199	2224	2117	2052	2271	[illegible]	2139	—
1986	High	2135	2190	2170	2105	2048	2207	2295	2392	2365	2239	2305	2315	[illegible]	2059	2392
	Low	2000	1955	2025	1980	1967	1991	2125	2170	2173	2117	2180	2118	1975	1899	1899
	Close	2028	2150	2027	2041	2013	2153	2262	2336	2191	2214	2298	2146	2000	2011	—
1987	High	2283	2200	2106	1960	2007	2098	2176	2248	2076	2003	1937	1965	1884	1915	2412
	Low	2148	2015	1931	1884	1825	1895	1970	2011	1920	1876	1837	1787	1797	1827	1787
	Close	2165	2039	1952	1906	1904	2034	2176	2034	1927	1886	1935	1820	1857	1906	—
1988	High	2030	2043	2115	2118	2055	2180	2031	1994	1895	1930	1908	1950	1773	1600	2180
	Low	1957	1980	2025	1971	1913	1986	1922	1825	1816	1794	1727	1758	1580	1500	1500
	Close	2000	2033	2066	1985	2034	2021	2005	1844	1850	1866	1814	1760	1584	1502	—
1989	High	1902	1774	1712	1799	1699	1638	1520	1268	1340	1517	1536	1555	1670	1591	2088
	Low	1750	1670	1625	1653	1540	1495	1251	1125	1125	1307	1371	1301	1433	1510	1125
	Close	1750	1682	1705	1695	1601	1495	1254	1146	1297	1476	1500	1446	1604	1558	—
1990	High	1465	1400	1323	1280	1300	1355	1373	1164	1042	1014	972	1012	1084	1125	1538
	Low	1340	1308	1208	1133	1202	1250	1090	1031	970	906	896	905	936	1055	896
	Close	1393	1322	1221	1205	1272	1302	1154	1053	995	939	925	962	1071	1065	—
1991	High	1120	1260	1419	1581	1478	1393	1425	1397	1325	1385	1291	1216			
	Low	1018	1083	1222	1300	1240	1270	1160	1275	1191	1200	1137	1115			
	Close	1120	1252	1348	1478	1304	1321	1366	1322	1213	1283	1150	1128			

Source: N.Y. Coffee, Sugar & Cocoa Exchange, Inc.

T.108

Coconut Oil and Copra

Copra, dried coconut meat, is processed or crushed into coconut oil and copra meal. The USDA forecast world 1990/91 copra output at 4.9 million tonnes, or 6 percent above the previous season. The Philippines is the largest producer, though its output is variable because of changing weather conditions. That country's 1990/91 copra crop was expected to exceed 1989/90's output by about 250,000 tonnes, due to favorable rainfall in 1989. Tropical storms can play a major part in determining crop size, and with copra's long production cycle, weather in the previous year can be a major factor influencing the current crop.

Indonesia's production has expanded and now accounts for a quarter of world output. The country's 1990 crop was likely to increase by 3 percent, after dryness cut the previous year's offtake. Smaller producers include Papua New Guinea, India, Mexico, and Sri Lanka. With beneficial rains, Sri Lanka's offtake in 1990 was forecast to expand.

World copra exports in 1990/91 were due to increase by nearly 7 percent to 320,000 tonnes. Copra accounts for 1 percent of the world trade in oil crops. The Philippines is the largest exporter, and the major markets are Germany, Japan and South Korea. Other exporters are Papua New Guinea, the New Hebrides, and the Solomon Islands.

The worldwide copra crush was projected to be 4.7 million tonnes in 1990/91, or about 5 percent more than the year before. The Philippines and Indonesia are important processors and export copra meal and coconut oil. Smaller producers, like New Guinea, sell copra to processors in Japan and the European Community (EC). Global ending stocks of copra were forecast to increase by 40,000 tonnes in 1990/91 to 160,000.

World coconut oil production was projected to rise by almost 5 percent to 2.9 million tonnes. The Philippines provide about half the world supply, followed by Indonesia. Exports were projected to reach 1.5 million tonnes, 4 percent more than in 1989/90.

Global coconut oil consumption in 1990/91 was forecast to remain unchanged at 2.8 million tonnes. Coconut oil makes up about 5 percent of world use of all vegetable and marine oils. The major export market is the EC, and the U.S. is an importer. In the U.S., most coconut oil is used in inedible items, like soap. In the edible oil market, there has been a shift out of tropical oils, like palm and coconut, to oils with less saturated fats, like soy. Still, coconut oil imports by the U.S. were likely to reach 475,000 tonnes in 1990/91.

World copra meal production in 1990/91 was forecast to climb by over 4 percent to 1.7 million tonnes. Exports were expected to fall by 100,000 tonnes to one million tonnes. In the Philippines and Indonesia, as consumers improve their diets, they demand more livestock and poultry products. Increasingly, copra meal will be diverted from the export sector to these domestic industries.

World Copra Production by Principal Countries In Thousands of Metric Tons

Crop Year	Naupu	Fiji	India	Indonesia	Jamaica	Malaysia	Mexico	Mozambique	Papua-New Guinea	Philippines	Solomon Isl.	Sri Lanka	Tanzania	Thailand	Ivory Coast	Van./New Heb.	Vietnam	World Total
1981–2	42	25	335	1,205	28	206	100	50	132	2,077	33	174	29	35	26	44	40	4,790
1982–3	42	25	268	1,091	29	208	110	50	120	2,015	31	131	29	30	27	45	40	4,600
1983–4	42	25	300	1,225	30	214	100	55	158	1,237	43	62	29	35	36	47	60	3,781
1984–5	42		360	1,260		166	100	55	176	1,813	45	240		93	60	39	65	4,681
1985–6			380	1,250		162	100	55	160	2,500	31	242		65	53	41	70	5,306
1986–7			320	1,270		97	115	65	149	2,100	28	125		74	48	36	70	4,709
1987–8[1]			300	1,250		97	140	65	136	1,800	35	62		74	48	30	70	4,350
1988–9[2]			330	1,270		94	140	65	150	1,850	35	130		74	49	35	80	4,280
1989–90[2]			350	1,210		93	135	65	150	1,900	35	170		74	50	35	80	4,740
1990–1[2]			330	1,260					150	2,150		190						4,880

[1] Preliminary. [2] Forecast. *Source: Foreign Agricultural Service, U.S.D.A.* T.109

World Coconut Oil Supply and Distribution In Thousands of Metric Tons

Crop Year	Production					Exports	Imports	Consumption						Ending Stocks		
	Malaysia	India	Indonesia	Philippines	Total			EC-12	India	Indonesia	Philippines	United States	Total	Philippines	United States	Total
1983/4	125	189	672	786	2,273	1,053	908	374	199	577	223	415	2,424	104	50	253
1984/5	104	226	708	919	2,607	1,186	1,102	410	226	574	253	386	2,553	115	59	223
1985/6	86	236	720	1,587	3,296	1,613	1,523	575	236	710	286	461	3,040	178	140	389
1986/7	56	198	731	1,320	2,934	1,487	1,340	553	198	610	257	488	2,800	187	123	375
1987/8	50	186	720	1,115	2,680	1,388	1,378	510	187	500	296	424	2,680	142	151	380
1988/9[1]	54	205	738	1,110	2,590	1,205	1,220	500	210	580	322	407	2,640	217	94	330
1989/90[2]	54	217	765	1,197	2,860	1,590	1,490	529	210	585	340	425	2,810	169	114	280
1990/1[2]		354			2,910	1,470	1,450						2,890			270

[1] Preliminary. [2] Forecast. *Source: Foreign Agricultural Service, U.S.D.A.* T.110

Supply & Distribution of Coconut Oil in the United States In Millions of Pounds

Year Begin. Oct. 1	Copra Tonne Rotterdam U.S. $	Coconut Oil CIF Rotterdam U.S. $	Imports For Consumption	Stocks Oct. 1[2]	Total Supply	Exports & Shipments	Disappearance			Production of Coconut Oil (Refined)				
							Total Domestic	Edible Pdt s.	Inedible Pdt's.	Total	Jan.–March	April–June	July–Sept.	Oct.–Dec.
1981–2	333	500	960	201	1,161	29	976	337.9	411.5	700.3	193.3	175.3	171.9	159.8
1982–3	414	608	882	60	942	20	880	340.0	493.9	665.7	162.1	162.4	168.7	172.5
1983–4	707	1,123	916	145	1,061	37	914	299.0	602.0	692.6	163.1	186.0	167.1	176.4
1984–5	476	746	890	111	1,001	20	851	275.0	376.0	616.2	161.3	175.7	145.1	134.1
1985–6	200	304	1,217	130	1,347	22	1,019	332.8	683.0	564.0	130.7	133.9	147.6	151.8
1986–7	285	413	1,087	308	1,395	48	1,076	319.4	720.4	715.4	197.9	180.4	155.4	181.7
1987–8	385	547	1,073	271	1,344	77	935	233.3	699.7	803.7	194.2	214.9	195.3	199.3
1988–9[1]	371	545	778	333	1,111	55	904	211	713	708.8	165.1	182.0	166.3	195.4
1989–90[1]	251	371	1,038	152	1,190	44	866	162		704.5	163.8	187.3	156.6	196.8
1990–1[1]	226	324	937	279	1,216	55	904			703.1	150.8	141.8	265.2	145.3

[1] Preliminary. [2] Includes G.S.A. stockpile & in U.S. bond. *Sources: Bureau of the Census; Agricultural Marketing Service* T.112

U.S. Consumption of Coconut Oil in End Products (Edible & Inedible Pdts.) In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	67.6	65.0	71.1	68.2	64.0	70.4	58.0	70.4	66.7	73.2	59.8	52.2	786.6
1982	63.3	59.6	61.7	58.5	64.7	64.2	62.2	63.9	66.1	60.2	70.5	60.6	755.5
1983	62.0	64.8	61.1	64.8	80.2	74.9	70.5	61.2	64.3	68.4	66.2	61.0	799.4
1984	71.5	68.5	66.0	67.0	72.6	70.9	61.8	70.7	48.1	63.4	56.6	45.3	762.4
1985	53.4	57.1	46.1	52.5	51.7	52.8	53.2	57.2	61.2	53.0	57.7	50.0	645.9
1986	67.7	43.8	44.7	52.5	45.7	50.0	49.5	67.2	52.8	78.7	65.9	52.2	670.7
1987	63.7	58.0	76.2	74.1	72.8	81.4	73.8	79.1	82.5	89.6	70.0	72.8	894.0
1988	76.1	71.2	59.1	59.6	66.8	65.8	55.1	53.8	48.7	65.2	57.8	57.9	737.1
1989	52.6	51.6	64.3	55.0	65.9	58.0	60.5	51.3	48.7	55.1	49.7	39.6	652.3
1990[1]	45.2	45.4	43.8	44.7	43.2	39.5	39.7	39.6	39.1	49.7	41.0	43.9	514.8

[1] Preliminary. *Source: Bureau of the Census* T.114

Stocks of Coconut Oil (Crude & Refined) in the United States[2] In Millions of Pounds

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1981	300.1	309.2	359.6	322.5	309.5	289.5	285.1	265.8	260.3	227.7	170.0	168.7
1982	173.1	153.6	186.0	160.7	153.0	170.8	194.8	184.3	166.9	159.7	144.5	144.5
1983	127.2	143.8	144.7	144.0	162.9	168.9	123.6	127.7	131.8	145.3	162.5	175.6
1984	175.2	215.5	193.8	165.0	150.2	121.8	78.7	90.9	100.2	111.0	119.8	107.3
1985	121.4	128.0	91.9	81.3	75.9	86.0	116.0	121.7	140.5	130.0	177.4	162.8
1986	206.5	259.0	262.1	285.1	247.4	289.3	275.0	273.4	273.8	308.0	295.5	320.5
1987	323.3	323.6	355.7	318.1	336.9	271.2	203.6	243.9	240.8	270.2	288.5	370.9
1988	367.7	358.8	370.7	371.1	356.0	353.6	336.6	290.2	287.5	335.0	332.7	307.0
1989	275.7	278.9	247.4	205.3	167.7	134.7	189.9	177.5	149.8	150.8	218.6	238.5
1990[1]	297.3	304.3	307.0	337.1	305.5	306.5	292.2	264.3	315.3	281.2	309.3	304.6

[1] Preliminary. [2] Includes coconut oil held in U.S. customs bond. *Source: Bureau of Census* T.115

Average Price of Coconut Oil (Crude) Tank Cars at New York[1] In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1981	26.3	25.0	23.9	24.3	26.0	27.4	28.1	26.4	24.3	26.6	26.6	25.4	25.9
1982	24.8	24.8	22.9	23.0	23.3	23.1	21.1	19.3	19.8	20.0	N.A.	N.A.	22.2
1983	N.A.	20.3	21.0	25.6	28.4	35.8	33.7	N.A.	N.A.	N.A.	N.A.	44.9	27.5
1984[1]	49.2	54.3	53.0	50.8	63.0	69.9	73.3	70.0	64.6	65.6	56.2	52.6	60.2
1985	42.2	40.2	41.0	41.0	N.A.	N.A.	31.7	27.5	25.0	24.0	22.8	17.4	31.3
1986	20.6	18.0	15.6	15.5	13.8	13.9	13.8	13.0	13.3	16.8	19.8	20.7	16.2
1987	21.40	20.88	19.30	20.38	21.44	24.25	25.75	25.13	24.40	24.69	24.50	27.15	23.27
1988	28.81	26.06	25.45	25.25	26.50	30.45	31.88	28.30	27.38	27.44	28.06	27.81	27.80
1989	26.75	27.63	27.90	28.94	29.90	29.56	28.94	27.75	28.63	27.25	26.35	24.75	27.86
1990	24.31	23.69	22.10	21.63	21.15	20.31	19.16	18.58	18.26	18.18	20.45		

[1] Prior to 1984, prices are at the U.S. Pacific Coast. *Source: Bureau of Labor Statistics* T.116

Coffee

With the July 1989 breakdown of the economic provisions in the International Coffee Agreement, (ICA) the coffee market began a skid that continued through 1990 and extended into 1991. The market continues to shake off the burden of years of subsidized oversupply and will probably continue to feel the repercussions for some time to come.

Supplies are only now just beginning to adjust to a free market, where prices have fallen by 40 percent in two years. World coffee production in 1990/91 was estimated by the USDA at 101 million 60-kilogram bags. This figure is nearly 5 percent above 1989/90's total, but below 1987/88's output of 102 million bags.

However, the USDA's global crop estimate was marred by serious questions concerning its estimate for Brazil. In its final report on the 1990/91 coffee crop, the USDA estimated Brazil's crop at 31 million bags. This figure contrasts sharply with numbers in the global coffee trade which center on a crop of no more than 22.5 million bags. In effect, the USDA's global total may be overstated by as much as 8.5 million bags.

According to most statisticians in the coffee trade, the world crop was probably closer to 92 million bags. This seems to indicate that the bumper year of 1987/88 was aberrational and not the harbinger of a new trend towards higher global production as some in the coffee industry had thought.

Many traders found themselves baffled by the USDA's apparent miscalculation of the Brazilian crop. Early USDA estimates, which were 37 million bags (a very large figure in any crop year), were based on leaf appearance. Later estimates based on berry counts were lower, firming at 32 million bags. However, it seems that a lack of proper fertilization, combined with poor weather, caused yields to fall sharply, and many berries had no coffee beans inside of them.

The confusion about the crop size was further complicated by the absence of any central Brazilian authority with responsibility for coffee. Before the Collor government assumed power in March 1990, the Brazilian Coffee Institute (IBC) was in charge of coffee policy. It maintained a statistical service which took regular crop surveys and issued crop reports that were highly respected.

However, in a move to close all state companies and to remove a powerful political power center whose views didn't coincide with his own, President Collor summarily closed the IBC, leaving coffee policy in Brazil in a state of disarray.

Brazil in 1990 lost a number of coffee trading firms which were unable to adapt to the new free market. This trend continued into 1991, which saw the bankruptcy of the largest Brazilian coffee trading firm, Intercontinental. Brazil's industry, beset by dock strikes, high interest costs, and a lack of fertilization which has affected coffee quality and quantity, will continue to face uncertainties.

Brazil's growers, saddled with heavy debt, are abandoning coffee plantations in some of the best growing regions. In areas where there is still a commitment to the land, coffee trees are being removed and more profitable crops planted.

Global consumption in 1990/91 was estimated at 94 million bags. However, world consumption is difficult to quantify. Major changes in the political landscape, especially in Eastern Europe, were likely to have an influence on demand. Consumption in producing nations was tough to get a handle on, due to changes in usage based on internal inflation rates and the amount of local coffee that is exported for foreign exchange.

Current crop supply and demand was in a statistical deficit of 2 million bags in 1990/91.

For all of 1990, the average composite price of coffee was 71.4 cents a pound, below 91.7 cents for all of 1989 and $1.16 in 1988. Robusta prices have suffered the most and remain at the low levels reached after the suspension of quotas in 1989. Prices of more desirable arabica beans recovered somewhat during 1990, widening the price differential between the two types to more than 50 percent in favor of arabicas, a record.

In September 1990, the lamed International Coffee Organization (ICO) decided to extend the life of the international agreement until September 1992. However, there were no economic clauses attached to the extension, and a renewal of quotas was not expected in the intervening years.

Futures Markets

Washed arabica futures are traded on the Coffee, Sugar, and Cocoa Exchange (CSCE) in New York. Robusta coffee futures are traded in London and Paris. Options are traded on the CSCE and the London Futures and Options Exchange (FOX).

World Coffee Supply and Distribution In Thousands of 60 Kilogram Bags

Crop Year	Beginning Stocks	Production	Total Imports	Total Supply	Total Bean Exports	Rst Grn Exports	Soluble Exports	Domestic Exports	Ending use	Stocks
1986/87	42,387	79,211	262	121,860	66,024	63,393	298	2,333	22,122	33,714
1987/88	33,714	102,749	292	136,755	66,657	63,991	337	2,329	22,920	47,178
1988/89[1]	47,178	91,739	315	139,232	69,081	64,830	1,146	3,105	22,850	47,301
1989/90[2]	47,301	92,563	293	140,157	78,132	73,273	1,142	3,717	24,309	37,716
1990/91[3]	37,716	101,690	343	139,749	78,406	73,208	1,225	3,973	25,158	36,185

Note: Total may not add because of rounding. [1] Preliminary. [2] Estimate. [3] Forecast. *Source: Foreign Agricultural Service, U.S.D.A.* T.117a

World Green Coffee (Total) Production In Thousands of 60 Kilo Bags (132.276 Lbs. Per Bag)

Crop Year	Papua-N. Guinea	Brazil	Cameroon	Colombia	Costa Rica	Ethiopia	Guatemala	India	Indonesia	Ivory Coast	Mexico	Salvador	Uganda	Zaire (Congo, K)	World Total
1980–1	870	21,500	1,959	13,500	2,140	3,264	2,702	1,977	5,365	6,090	3,862	2,940	2,133	1,526	86,344
1981–2	910	33,000	1,850	14,342	1,782	3,212	2,653	2,540	5,785	4,160	3,900	2,886	2,885	1,425	98,189
1982–3	640	17,750	1,830	13,300	2,300	3,670	2,530	2,170	4,750	4,510	4,530	3,100	3,000	1,354	82,778
1983–4	925	30,000	1,000	13,000	2,070	3,300	2,340	1,667	5,515	1,420	4,530	2,400	2,700	1,350	88,595
1984–5	775	27,000	2,316	11,000	2,516	2,587	2,703	3,250	5,600	4,609	4,250	2,680	2,800	1,540	90,266
1985–6	860	33,000	2,067	12,000	1,514	2,833	2,650	2,033	5,800	4,420	4,826	2,300	2,700	1,610	95,934
1986–7	756	13,900	2,191	11,000	2,566	2,700	2,843	3,350	5,900	4,405	5,297	2,275	2,700	1,875	79,594
1987–8	1,100	38,000	1,251	13,000	2,375	3,100	3,020	2,050	5,965	3,103	4,717	2,538	2,600	2,000	103,162
1988–9	1,175	25,000	1,760	10,700	2,758	2,900	3,022	3,590	6,750	3,989	5,500	1,492	3,000	1,650	93,278
1989–90[1]	1,118	26,000	1,508	13,300	2,453	3,000	3,474	2,000	6,900	4,734	5,000	2,737	3,100	1,700	96,433
1990–91[2]	1,030	31,000	1,200	13,600	2,680	3,000	3,345	2,800	7,000	4,170	4,550	2,600	3,000	1,625	100,886

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.117

World Green Coffee (Exportable)[3] Production In Thousands of 60 Kilo Bags

Crop[2] Year	Papua-N. Guinea	Brazil	Cameroon	Colombia	Costa Rica	Ethiopia	Guatemala	Indonesia	Ivory Coast	Kenya	Mexico	Salvador	Uganda	Zaire (Congo, K)	World Total
1980–1	837	13,500	1,926	11,675	1,932	1,664	2,381	4,137	6,026	1,648	2,362	2,740	2,090	1,346	66,064
1981–2	901	24,500	1,815	12,492	1,539	1,596	2,328	4,630	4,095	1,434	2,450	2,686	2,840	1,240	77,311
1982–3	631	9,750	1,785	11,445	2,077	2,108	2,195	3,636	4,445	1,501	2,830	2,900	2,954	1,159	62,366
1983–4	923	21,500	945	11,140	1,837	1,728	2,000	4,375	1,395	1,938	3,030	2,200	2,653	1,150	67,676
1984–5	762	16,500	2,261	9,135	2,281	1,087	2,373	4,590	4,582	1,488	2,635	2,480	2,752	1,340	67,449
1985–6	842	24,000	1,987	10,130	1,276	1,293	2,350	4,800	4,391	1,951	3,326	2,120	2,650	1,410	74,841
1986–7	738	4,900	2,058	9,000	2,324	1,034	2,543	4,950	4,375	1,730	3,797	2,095	2,649	1,670	57,888
1987–8	1,087	28,000	1,206	10,980	2,135	1,723	2,720	4,915	3,071	2,037	3,137	2,369	2,547	1,791	80,463
1988–9	1,160	15,500	1,725	8,891	2,508	1,150	2,717	5,478	3,957	1,635	3,880	1,332	2,946	1,530	70,755
1989–90[1]	1,104	15,500	1,473	11,538	2,198	1,200	3,164	5,575	4,700	1,435	3,350	2,557	3,045	1,480	72,557
1990–91[4]	1,016	20,000	1,165	11,780	2,425	1,200	3,035	5,620	4,135	1,055	2,860	2,420	2,945	1,410	76,120

[1] Preliminary. [2] Coffee marketing year begins in July in some countries & in others about Oct. [3] Exportable production represents total harvested production minus estimated domestic consumption. [4] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.118

Coffee United States Trade—Quantity and Value

		Imports				Exports				Reexports			
		Green	Roasted[1]	Soluble[1]	Total	Green	Roasted[1]	Soluble[1]	Total	Green	Roasted[1]	Soluble[1]	Total
1983	Ths. Bags	16,449	197	1,019	17,665	14	147	199	360	599	30	22	651
	Mil. $	2,592	32	141	2,765	3	44	51	98	104	10	3	117
1984	Ths. Bags	17,734	284	1,075	19,093	29	141	188	358	888	7	5	900
	Mil. $	3,061	50	153	3,264	5	44	46	95	163	2	1	167
1985	Ths. Bags	18,698	258	994	19,950	22	167	140	328	695	7	12	714
	Mil. $	3,128	49	139	3,315	4	52	35	90	122	2	3	127
1986	Ths. Bags	19,843	268	930	21,044	45	167	107	319	1,085	17	5	1,107
	Mil. $	4,359	65	183	4,607	11	50	33	94	255	5	1	261
1987	Ths. Bags	19,906	288	925	21,119	57	138	156	351	819	5	9	834
	Mil. $	2,706	47	145	2,898	10	39	40	89				
1988	Ths. Bags	15,348	447	930	16,725	57	105	129	291	995	3	4	1,002
	Mil. $												
1989	Ths. Bags	19,337	373	1,122	20,832	91	162	135	388	553	2	3	558
	Mil. $												

[1] 60 kilogram bags of 132.276 pounds each. [2] Converted to bags of green bean equivalent (GBE) at 1.19 pounds green to 1 pound roasted and 2.6 pounds green to 1 pound soluble. *Source: Compiled from U.S. Department of Commerce, Bureau of Census data.*

COFFEE

Origin of Green Coffee Imports (for Consumption) into the U.S. In Thousands of 60 Kilo Bags

Year	Uganda	Brazil	Colombia	Costa-Rica	Domin. Repub.	Ecuador	Ethi-opia	Guate-mata	Indon-esia	Ivory Coast	Mexico	Peru	Phil-ippines	Salva-dor	Vene-zuela	Grand Total
1984	570	3,866	2,170	258	447	961	423	1,118	1,030	1,144	1,553	557	296	1,052	88	17,734
1985	739	4,148	2,554	360	439	974	195	1,054	1,041	951	1,812	543	407	1,366	107	18,698
1986	739	2,200	2,629	413	488	1,371	243	1,658	1,346	694	2,125	675	440	1,108	224	19,483
1987	587	3,928	2,549	551	446	1,285	421	1,439	911	476	2,764	573	105	1,117	163	19,906
1988	481	4,213	2,235	233	366	811	218	609	731	654	1,719	436	298	829	72	15,348
1989[1]	458	4,155	2,413	393	402	1,137	432	1,404	635	335	3,937	673	362	790	87	19,377

[1] Preliminary. *Source: U.S. Department of Commerce*

T.122

Total Coffee (Green) Imports (for Consumption) into the U.S. In Thousands of Bags of Gokylos

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	1,556	1,332	1,373	1,253	1,502	1,034	1,319	1,230	1,532	1,685	1,380	1,253	16,449
1984	1,598	1,299	1,440	1,905	1,615	1,059	1,722	1,735	1,432	1,614	1,127	1,187	17,734
1985	1,622	1,681	1,702	1,430	1,324	1,751	1,217	1,757	1,773	1,385	1,272	1,785	18,698
1986	2,360	1,836	1,645	1,667	1,810	1,286	1,549	1,513	1,641	1,535	1,449	1,192	19,483
1987	1,092	1,218	1,841	1,789	1,883	2,181	1,717	1,481	1,770	2,631	1,246	1,056	19,906
1988	1,175	1,683	1,427	1,179	1,141	832	1,543	1,621	1,238	1,272	1,195	1,040	15,348
1989	1,646	1,323	1,368	1,398	1,296	1,199	1,634	1,974	1,951	2,180	1,748	1,660	19,337
1990	1,950	1,989	2,358	1,783	1,658	1,548	1,451	1,261	1,229	1,611	1,140		

[1] Prior to 1988 data are in thous of 60 kilo bags. *Source: U.S. Dept. of Commerce*

T.121

Average Spot Price of Coffee (Brazilian[1]) at N.Y. In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1983	133.0	133.0	133.0	141.5	141.5	141.5	141.5	143.0	143.0	143.0	143.0	143.0	140.0
1984[1]	150.0	151.0	151.0	148.0	148.0	147.0	145.0	145.0	146.0	140.0	138.0	138.0	145.6
1985	140.0	145.0	141.0	138.0	138.0	140.0	134.0	133.0	133.0	137.0	155.0	175.0	142.4
1986	241.0	226.0	235.0	228.0	218.0	193.0	188.0	185.0	193.0	187.0	167.0	146.0	200.6
1987	126.5	119.8	103.4	102.1	109.2	108.0	99.8	95.9	96.6	105.4	118.6	119.4	108.7
1988	119.0	127.4	127.3	122.8	121.7	122.5	121.0	111.5	115.1	113.2	116.8	131.1	120.8
1989	146.6	131.1	127.6	126.3	135.6	121.4	88.4	77.8	78.3	70.6	71.5	70.0	103.8
1990	71.5	76.5	81.4	84.4	83.6	78.4	75.1	80.7	86.7	85.1	79.8	81.6	80.4

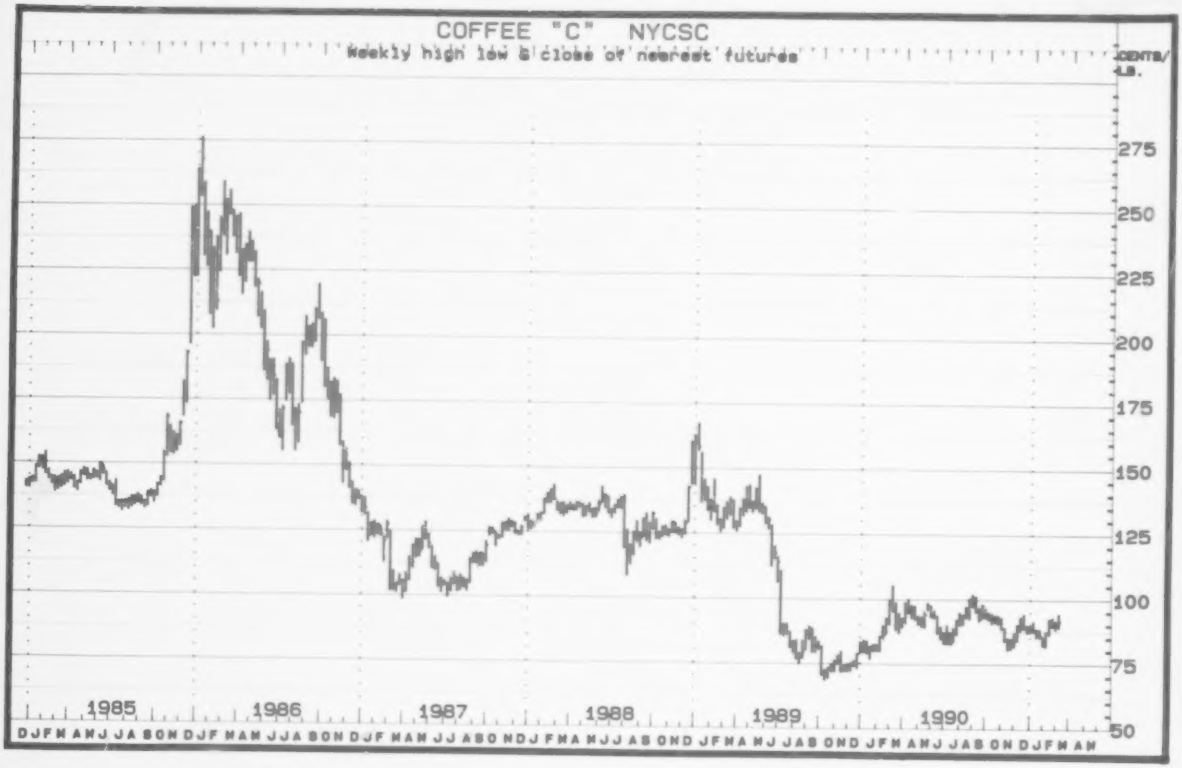
[1] Prices prior to 1984 are for Santos No. 4 at N.Y. *Sources: Bureau of Labor Statistics (0191-0101.01); Wall St. Journal; CRB.*

T.120

U.S. Average Monthly Wholesale Prices of Coffee In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Ground Roast—All Packs													
1985	276.7	277.3	277.8	277.7	279.0	273.0	273.5	273.6	273.9	273.7	275.0	284.0	276.3
1986	334.5	357.5	361.7	367.6	368.9	373.9	366.5	358.0	352.6	350.9	347.7	347.6	357.3
1987	329.6	329.4	319.4	310.1	302.5	300.2	296.4	296.0	279.0	281.4	284.3	283.4	301.0
1988	286.1	287.2	292.8	295.6	295.2	295.7	287.4	288.5	289.4	292.4	288.1	288.8	290.6
1989	294.1	305.3	306.2	305.5	304.8	304.8	303.8	297.8	289.3	285.3	280.6	280.6	296.5
1990	279.8	276.7	275.9	277.6	277.1	278.2	278.2	279.0	278.7	275.6	282.8		
Ground Roast in One Lb Cans													
1985	259.7	259.9	261.3	260.8	267.3	258.3	254.6	254.9	254.6	254.6	256.6	268.6	259.3
1986	334.2	345.4	346.7	345.7	350.7	349.4	348.4	350.3	341.7	343.8	334.5	334.5	343.8
1987	311.4	314.3	298.1	296.6	297.3	296.9	291.7	292.5	281.0	282.0	285.6	284.6	294.3
1988	284.0	283.2	294.9	294.2	294.2	298.0	279.5	284.1	283.4	286.7	285.0	285.1	287.7
1989	288.8	301.3	311.1	314.0	314.0	315.2	315.0	308.0	298.5	300.4	301.0	303.0	305.9
1990	303.7	303.0	302.8	308.6	309.8	309.2	309.2	309.2	309.1	304.2			
Soluble Per 16 Ounces													
1985	795.1	789.5	791.5	793.3	790.1	791.1	799.2	801.8	804.1	804.8	817.8	837.8	801.3
1986	932.4	995.4	1012.8	1020.3	1016.1	1014.0	1003.4	956.4	970.8	952.2	977.7	977.7	985.8
1987	943.2	885.2	861.9	861.9	866.5	866.5	846.3	846.3	825.6	830.6	830.6	830.6	857.9
1988	805.8	805.8	815.3	812.6	812.6	812.6	922.0	922.0	922.0	922.0	922.0	922.0	866.4
1989	915.4	948.4	941.9	941.9	941.9	952.3	952.3	921.0	921.0	915.6	915.6	915.6	931.9
1990	915.6	915.6	902.5	918.2	918.2	918.2	918.2	918.2	918.1	912.9	912.9		

Source: Bureau of Labor Statistics; Foreign Agricultural Service, U.S.D.A.



High, Low & Closing Prices of May Coffee Futures in New York In Cents per Pound

Year of Delivery		Year Prior to Delivery										Delivery Year					Life of Delivery Range
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1984	High	117.00	117.75	126.00	124.50	124.00	127.25	130.05	137.30	139.90	144.10	139.65	145.00	152.30	154.23	158.50	158.50
	Low	109.50	113.00	116.00	121.50	121.60	122.25	125.25	129.30	134.50	134.30	134.25	132.75	141.90	147.00	147.80	108.50
	Close	115.13	116.75	123.38	122.51	122.26	125.80	129.25	135.50	138.78	135.94	137.05	144.84	151.37	152.20	154.00	—
1985	High	131.50	138.50	152.00	146.28	140.15	146.00	143.15	135.35	139.15	140.25	147.90	150.70	146.20	147.30	147.50	152.00
	Low	125.28	130.00	137.50	137.75	132.90	133.25	132.75	131.31	134.50	135.60	138.65	139.85	139.25	138.85	143.00	122.01
	Close	131.38	138.50	142.25	137.76	133.48	144.15	133.80	135.05	135.72	140.25	147.24	139.96	144.43	145.80	143.50	—
1986	High	142.50	145.00	144.50	148.75	143.50	142.13	144.45	161.18	171.45	214.09	272.62	261.00	257.00	243.70	234.25	272.62
	Low	136.59	137.00	141.55	142.28	136.20	137.75	137.15	136.20	155.25	174.90	217.80	207.78	231.15	215.25	202.00	130.25
	Close	141.75	143.00	144.00	144.88	138.65	140.75	140.60	161.18	171.45	241.09	218.51	246.96	246.44	229.07	204.05	—
1987	High	265.00	261.00	250.00	210.50	198.50	205.00	219.50	189.00	173.00	150.50	137.50	130.50	126.80	121.30	128.00	291.83
	Low	247.00	239.10	210.25	177.00	169.95	165.50	173.00	165.38	149.26	132.50	122.20	115.50	99.90	98.10	114.50	98.10
	Close	265.00	247.38	210.25	180.25	184.50	199.50	192.78	169.38	151.25	138.00	126.99	129.31	100.04	119.30	122.08	—
1988	High	131.00	128.00	129.75	124.00	114.90	123.90	123.75	131.00	134.85	133.25	134.50	144.40	137.50	136.00	139.75	150.00
	Low	111.75	110.50	119.20	110.00	107.00	109.50	116.50	118.55	128.75	128.15	128.00	134.40	131.70	130.60	130.10	107.00
	Close	111.75	123.01	124.00	111.31	109.45	122.90	118.88	129.06	131.58	128.38	134.29	135.31	134.51	130.60	131.10	—
1989	High	144.40	144.00	140.60	143.75	135.00	126.75	132.00	129.70	128.13	158.00	159.20	137.00	133.24	143.20	147.00	159.20
	Low	140.00	135.75	133.35	130.25	118.75	112.13	120.55	123.70	122.00	121.40	128.00	122.90	125.55	127.30	132.75	112.13
	Close	142.50	136.90	136.00	131.25	124.13	122.50	132.00	124.88	122.80	152.86	128.59	127.32	128.13	134.70	142.85	—
1990	High	120.85	124.48	124.50	123.00	108.00	91.00	92.35	85.50	83.55	85.50	85.40	94.40	105.50	99.80	95.00	124.50
	Low	115.25	113.50	113.50	105.00	85.70	82.25	83.05	72.75	76.30	77.40	78.50	81.35	87.30	90.60	88.90	72.75
	Close	116.38	117.00	118.50	110.50	85.94	90.25	85.13	78.80	79.90	81.45	81.59	93.79	92.14	92.25	93.95	—
1991	High	113.00	109.00	106.00	103.50	102.00	109.10	109.25	100.35	95.95	98.00	93.60					
	Low	98.50	100.50	98.00	93.35	93.15	99.25	98.10	96.40	87.00	89.10	84.85					
	Close	101.75	101.18	103.15	93.35	102.00	108.00	98.45	96.45	89.30	91.15	85.60					

Source: N.Y. Coffee, Sugar & Cocoa Exchange, Inc.

T.125

COFFEE

Average Open Interest of Coffee Futures at New York In Contracts

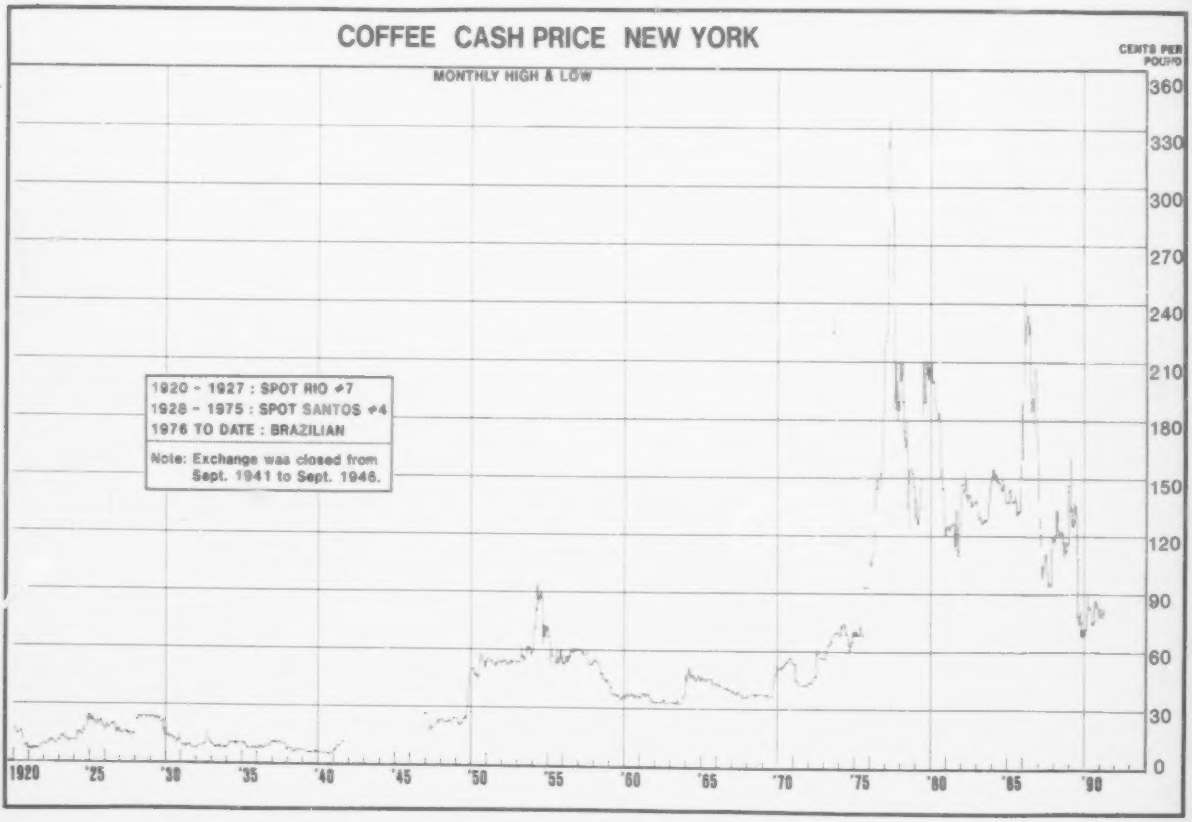
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	9,718	10,346	10,498	11,692	11,552	9,930	8,154	8,957	8,950	9,260	9,103	8,787
1984	7,928	9,664	11,925	12,058	11,343	9,844	9,969	9,776	9,347	10,696	10,192	11,320
1985	13,493	13,291	12,952	12,885	12,811	12,393	11,722	11,015	10,198	10,504	11,652	13,287
1986	13,104	14,391	15,714	15,972	16,684	15,712	15,917	16,374	16,798	18,079	16,995	14,905
1987	15,317	16,034	17,415	20,445	22,455	21,160	22,536	23,943	25,857	26,418	22,757	21,064
1988	22,581	26,100	24,591	21,413	22,228	23,346	21,570	24,525	22,460	21,961	19,424	20,356
1989	24,544	23,684	23,246	25,870	23,663	24,716	27,184	31,410	32,404	35,019	32,687	32,096
1990	37,352	43,516	46,187	43,978	41,756	40,464	39,856	41,428	39,278	39,523	43,750	41,365

Source: N.Y. Coffee, Sugar & Cocoa Exchange, Inc. T.124

Volume of Trading of Coffee "C" Futures at New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	30,567	32,884	44,211	37,399	44,917	45,575	26,065	32,818	22,579	38,999	34,428	36,999	427,441
1984	33,327	44,890	46,793	46,833	51,174	42,891	34,956	48,979	43,159	29,703	37,457	36,094	499,133
1985	48,733	54,809	52,365	58,531	38,755	54,725	42,222	39,425	23,615	58,870	83,845	94,671	650,768
1986	113,305	95,509	76,787	82,308	75,176	87,323	78,670	106,366	93,465	112,685	89,713	61,835	1,073,142
1987	69,564	81,427	78,671	104,350	71,189	86,564	77,621	106,182	77,207	85,315	72,846	53,650	964,586
1988	67,955	119,075	85,154	80,772	73,379	125,684	91,569	118,956	88,460	83,713	85,366	129,627	1,149,710
1989	141,903	106,019	102,594	129,018	95,902	134,848	100,700	122,207	97,744	104,100	111,434	82,484	1,328,953
1990	130,223	174,115	211,105	144,641	128,121	147,605	127,767	172,947	119,088	113,569	175,067	119,802	1,774,050

Source: N.Y. Coffee, Sugar & Cocoa Exchange, Inc. T.123



Coke

U.S. Salient Statistics of Coke In Thousands of Short Tons

Year	Production[2]	Domestic Consumption	Producers' Stocks—Jan. 1: Total	Oven Coke at Plants: Merchant	Oven Coke at Plants: Furnace	Petroleum Coke	Exports	Imports	Exports to: Canada	Exports to: Mexico	Exports to: Bel./Lux.	Exports to: Netherlands	Exports to: Korea Rep.	Exports to: Turkey	Exports to: Venezuela	Avg. Price of Coke Exports $ SH. Ton
1977	53,509	54,144	6,487	314	6,173	2,127	1,241	1,829	634.9	49.4						
1978	49,009	56,948	6,444	136	6,308	2,050	693	5,722	299	37.4						
1979	52,943	53,826	3,534	184	3,350	2,214	1,440	3,974	598	61.0						
1980	46,132	41,278	5,185	595	4,590	1,042	2,071	659	812	75.0						
1981	42,786	44,046	8,627	1,106	7,521	846	1,170	527								
1982	28,115	25,776	6,724	403	6,324	900	993	120	449.7	72.0	99.3	132.7	4.5	—	40.1	61.81
1983	25,808	29,850	8,190	331	7,858	1,344	665	35	471.2	55.8	24.7	24.0	—	—	7.0	68.53
1984	30,561	29,899	3,518	286	3,233	1,096	1,045	582	477.0	72.8	106.4	150.2	64.8	80.1	65.8	66.48
1985	28,651	29,270	3,716	353	3,363	968	1,122	578	407.3	97.3	108.8	68.0	.1	57.6	42.6	68.40
1986	25,540	25,351	2,553	404	2,148	1,232	1,004	329	476.9	78.3	59.0	60.7	—	17.4	20.4	65.23
1987	28,037	29,387	2,066	288	1,778	1,206	574	922	248.2	106.4	21.5	—	.2	32.0	89.6	83.58
1988	32,405	33,480	1,064	218	846	1,350	1,093	2,688	347.8	101.2	—	15.3	—	34.2	94.7	70.57
1989[1]	33,015	33,904	1,583	163	1,420	1,558	1,085	2,311	644.1	156.6					77.1	
1990[3]	30,000	30,000	1,919	216	1,703	1,720	600	700								

[1] Preliminary. [2] Beehive and oven, coke & breeze. [3] Estimate. *Source: Bureau of Mines* T.127

Petroleum Coke Production in the United States In Thousands of Short Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1985	2,469	2,215	2,502	2,608	2,748	2,892	2,962	2,978	2,684	2,942	2,899	3,305	33,204
1986	3,161	2,825	3,027	2,865	3,191	3,176	3,059	3,230	3,171	3,066	2,925	3,206	36,903
1987	3,228	2,960	3,034	2,974	3,087	3,121	3,190	3,138	3,047	3,060	3,158	3,384	37,380
1988	3,436	3,171	3,415	3,164	3,367	3,282	3,333	3,347	3,205	3,281	3,347	3,462	39,811
1989[1]	3,505	2,931	3,201	3,200	3,337	3,406	3,509	3,447	3,255	3,252	3,104	3,227	39,533
1990[1]	3,336	3,142	3,329	3,278	3,354	3,288	3,433	3,612	3,304				

[1] Preliminary. *Source: Bureau of Mines* T.128

United States Coke Production & Stock In Thousands of Short Tons

Year	Production: Beehive & Oven (Byproduct): Jan.–Mar.	Apr.–June	July–Sept.	Oct.–Dec.	Total	Stocks: Oven-coke Plants: Jan. 1	Apr. 1	July 1	Oct. 1	Stocks: Petroleum Coke: Jan. 1	Apr. 1	July 1	Oct. 1
1980	13,042	12,320	10,052	10,718	46,132	5,185	5,832	7,426	9,018	1,042			
1981	11,178	9,853	11,175	10,580	42,786	8,627	7,586	4,990	5,198	846	948	758	765
1982	8,828	7,507	6,270	5,509	28,115	6,724	7,455	7,871	7,969	900	939	1,091	1,244
1983	5,579	6,451	6,753	7,025	25,808	8,190	5,781	4,569	3,875	1,344	1,317	1,231	964
1984	7,696	8,227	7,522	7,115	30,561	3,518	3,153	2,966	3,441	1,096	1,116	912	991
1985	7,211	7,601	7,150	6,689	28,651	3,716	3,471	3,279	3,217	968	1,086	1,100	950
1986	7,252	7,156	5,513	5,618	25,540	2,553	2,319	2,174	2,141	1,232	1,457	1,366	1,296
1987	5,937	7,073	7,438	7,589	28,037	2,066	1,853	1,546	1,436	1,206	1,435	1,307	1,128
1988	7,846	8,112	8,195	8,251	32,404	1,064	956	1,140	1,271	1,350	1,441	1,636	1,450
1989[1]	8,172	8,360	8,302	8,181	33,015	1,583	1,167	1,264	1,763	1,558	1,655	1,813	1,724
1990[1]	7,364	7,449				1,919	1,972			1,720	1,791	1,721	1,450

[1] Preliminary. *Source: Energy Information Administration* T.131

Average Price of Coal Receipts at Coke Plants In Dollars per Short Ton

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	52.05			51.01			51.34			48.65			50.83
1987	46.60			46.24			46.51			46.85			46.55
1988	47.29			48.04			48.13			47.66			47.70
1989[1]	47.36			47.23			48.10			47.28			47.50
1990[1]	47.61			47.65									

[1] Preliminary. *Source: Bureau of Labor Statistics* (0522-0101) T.130

Copper

U.S. mine production of copper rose by 3.5 percent in 1990 to 1.55 million tonnes, valued at $4.2 billion, according to the Bureau of Mines. Copper recovery from old scrap was estimated at 530,000 tonnes, down modestly from 544,000 in 1989. Old scrap accounted for about 24 percent of apparent U.S. consumption of 2.2 million tonnes. New scrap purchased from fabricators totaled 760,000 tonnes of contained copper, of which some 75 percent was consumed at brass mills. Scrap, in all forms, accounted for 43 percent of domestic copper supplies. U.S. reliance on imports fell to 5 percent of apparent consumption from 7 percent a year earlier.

World copper production rose to 8.92 million tonnes in 1990 from 8.85 million in 1989, despite the continued closure of the open pit mine on the island of Bougainville in Papua New Guinea. That mine had a capacity of 180,000 tonnes of contained copper per year. Several attempts to resolve the civil strife on the island failed in 1990. It was estimated that restarting the mine would take at least 18 months from the time it was considered safe to do so. With strikes and rebel attacks in Peru, rock bursts in Chile, and political and transportation problems in Zambia and Zaire, an estimated 500,000 tonnes of potential output was lost in 1990. Peru's Energy and Mines Ministry reported that country's 1990 copper production fell by 12 percent to 317,706 tonnes.

In December, the Escondida mine in Chile began shipping copper concentrates through a 164-kilometer slurry pipeline from the mine's site in the Andes to the port of Coloso. The first boatload of 25,000 tonnes of concentrates left for Japan on December 31, seven months ahead of schedule. At full capacity, Escondida is expected to produce 760,000 tonnes of concentrates, containing 320,000 tonnes of copper per year, making it the world's third-largest mine (after Chile's government-owned Chuquicamata and El Teniente Mines).

The operator, BHP Utah Minerals, said the Escondida mine was to produce 662 million tonnes of ore containing 2.1 percent copper, giving it a projected life of 52 years. Before byproduct credits, the cost of production at the mine was expected to be in the neighborhood of 45 cents/lb. About 77 percent of Escondida concentrates was committed to Japanese, German and Finnish refiners under 12-year contracts that were part of the mine's financing.

Futures Markets

High-grade copper futures are traded on the Commodity Exchange (COMEX) in New York. Cash copper and futures are traded on the London Metal Exchange (LME). Options are traded on both exchanges.

In late 1990, LME prices were at a substantial premium to COMEX prices, and as a result, copper inventories were attracted from the U.S. and other producing nations to the LME. COMEX warehouse stocks ended 1990 at 20,200 tons, up 24 percent on the year, while LME stocks rose by 68 percent to 200,100 tons.

World Mine Production of Copper (Content of Ore) In Thousands of Metric Tons

Year	Australia	Canada[3]	Chile	China	Finland	Japan	Mexico	Peru	Zambia	Poland	Zaire	South Africa	Philippines	United States[3]	USSR[3]	World Total[1]
1982	245.3	612.4	1,242	175.0	37.8	50.7	229.2	353.8	574.5	376.0	519.0	188.7	292.1	1,147	560.0	7,622
1983	261.5	653.0	1,255	175.0	39.3	46.0	196.0	318.8	541.0	402.3	536.5	205.0	271.4	1,038	570.0	7,659
1984	235.7	721.8	1,308	180.0	31.3	43.3	189.7	353.9	532.7	431.0	562.0	198.2	233.4	1,103	590.0	7,999
1985	259.8	738.6	1,360	185.0	27.9	43.2	177.1	391.3	458.6	431.3	557.9	195.4	222.2	1,103	600.0	7,988
1986	248.4	697.9	1,399	185.0	26.0	34.9	189.1	397.4	462.4	434.0	531.7	184.2	222.6	1,144	620.0	7,993
1987	232.7	790.2	1,413	250.0	20.4	23.8	253.7	392.3	463.2	438.0	525.0	188.1	216.1	1,244	630.0	8,306
1988[3]	238.3	753.5	1,472	375.0	20.2	16.7	280.2	298	431.8	437.0	530.0	168.5	218.1	1,420	640.0	8,537
1989[1]	289.2	716.9	1,645	375.0	14.5	14.7	260.0	360	445.0	436.0	475	196.6	189.5	1,498	640.0	8,887
1990[1]	295	760	1,550	440				320	430	430	390		190	1,550	680	8,920

[1] Estimate. [2] Preliminary. [3] Recoverable. *Source: Bureau of Mines* T.132

Commodity Exchange Inc. (COMEX) Warehouse Stocks of Copper In Thousands of Short Tons

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1984	409.2	417.7	409.9	403.2	392.3	372.5	361.6	335.6	320.6	310.8	300.7	288.1
1985	276.3	258.2	238.8	224.8	214.3	201.0	186.4	167.7	155.0	149.0	136.4	124.6
1986	120.3	120.1	118.5	116.4	114.5	108.5	103.4	95.7	90.6	86.6	81.0	84.0
1987	93.3	102.8	108.9	97.5	88.4	71.4	65.3	69.0	73.5	89.2	66.2	33.7
1988	18.5	16.9	16.8	11.8	10.2	19.0	16.9	24.6	22.3	13.6	9.5	5.9
1989	13.4	14.9	17.3	29.7	21.2	25.2	23.0	20.4	15.2	11.4	10.4	9.1
1990	16.3	7.2	4.1	4.5	6.0	14.7	18.1	11.5	8.9	6.7	8.3	9.3
1991	20.2	14.7										

Source: Commodity Exchange, Inc. N.Y. (COMEX) T.144

U.S. Salient Statistics of Copper In Thousands of Metric Tons

	New Copper Produced										Stocks—Dec 31			Apper. Consumption[6]	
	From Domestic Ores						Imports[3]		Exports						
Year	Mines	Smelters	Refineries	From Foreign Ores[2]	Total New	Secondary Recovered[7]	Unmanufactured	Refined	Ore, Concentrate[4]	Refined[5]	N.Y. Commodity Exch.	Primary Producers (Refined)	Blister & Materials in Solution	Refined Copper (Reported)	Primary & Old Copper[8]
1981	1,538	1,295	1,419	125	1,544	592	447	331	151	24	170	151	277	2,025	2,292
1982	1,147	941	1,050	176	1,227	518	525	258	195	31	248	268	233	1,658	1,762
1983	1,038	888	1,028	154	1,182	449	675	460	50	81	371	154	174	1,804	2,013
1984	1,103	990	1,090	75	1,165	461	552	445	69	91	251	121	245	2,123	2,107
1985	1,104	939	1,004	54	1,057	503	444	378	116	38	109	66	146	1,976	2,144
1986	1,144	908	1,074	N.A.	1,074	477	598	502	174	12	84	36	136	2,103	2,137
1987	1,244	972	1,127	N.A.	1,127	498	568	469	125	9	17	29	150	2,126	2,197
1988	1,417	1,043	1,406	N.A.	1,406	518	511	332	211	58	12	16	121	2,210	2,212
1989[1]	1,497	1,120	1,352	125	1,477	544	515	300	267	130	15	18	132	2,203	2,182
1990[9]	1,550	1,330			1,560	520	600	300	200	180	10	17	120	2,230	2,200

[1] Preliminary. [2] Also from matte, etc., refinery reports. [3] For consumption. [4] Blister (copper content)." [5] Ingots, bars, etc. [6] Withdrawals from total supply on domestic account. [7] From old scrap only. [8] Old scrap only. [9] Estimate. *Source: Bureau of Mines* T.133

Consumption of Refined Copper[2] in the United States In Thousands of Metric Tons

	By-Products						By Class of Consumer						
Year	Cathodes	Wire Bars	Ingot & Ingot Bars	Cakes & Slabs	Billets	Other	Wire Mills	Brass Mills	Chemical Plants	Ingot Makers	Foundries	Miscellaneous	Total Consumption
1981	1,198.9	489.2	66.7	121.8	101.9	46.7	1,449.6	536.2	.4	5.4	11.3	22.2	2,025.2
1982	1,211.0	195.1	45.1	92.4	82.2	32.4	1,232.8	393.2	.4	4.4	7.6	19.7	1,658.1
1983	1,448.1	77.4	53.2	115.3	101.8	8.2	1,269.9	500.3	.6	3.2	11.3	18.8	1,803.9
1984	1,635.4	72.1	74.4	127.7	118.5	8.2	1,401.7	514.0	.7	5.3	19.8	34.6	1,976.0
1985	1,563.4	70.3	64.2	115.8	139.6	22.8	1,401.7	564.9	.9	1.4	20.6	22.9	2,101.5
1986	1,717.7	52.5	105.9	81.6	127.9	16.9	1,491.9	564.9	.9	1.4	20.6	22.9	2,102.6
1987	1,849.2	14.4	113.3	68.4	86.5	20.0	1,595.6	514.5	1.2	1.4	16.6	22.5	2,151.8
1988[1]	1,967.4	14.0	54.2	63.0	99.0	12.7	1,667.2	493.2	1.0	2.6	14.5	31.9	2,210.4
1989[1]	1,981.6	6.1	34.4	64.9	104.9	11.2	1,698.4	461.0	.9	1.3	14.9	26.6	2,203.1
1990[3]							1,900	560					2,230

[1] Preliminary. [2] Primary & secondary. [3] Estimate. Source: Bureau of Mines T.134

U.S. Mine Production of Recoverable Copper, by Selected States In Thousands of Metric Tons

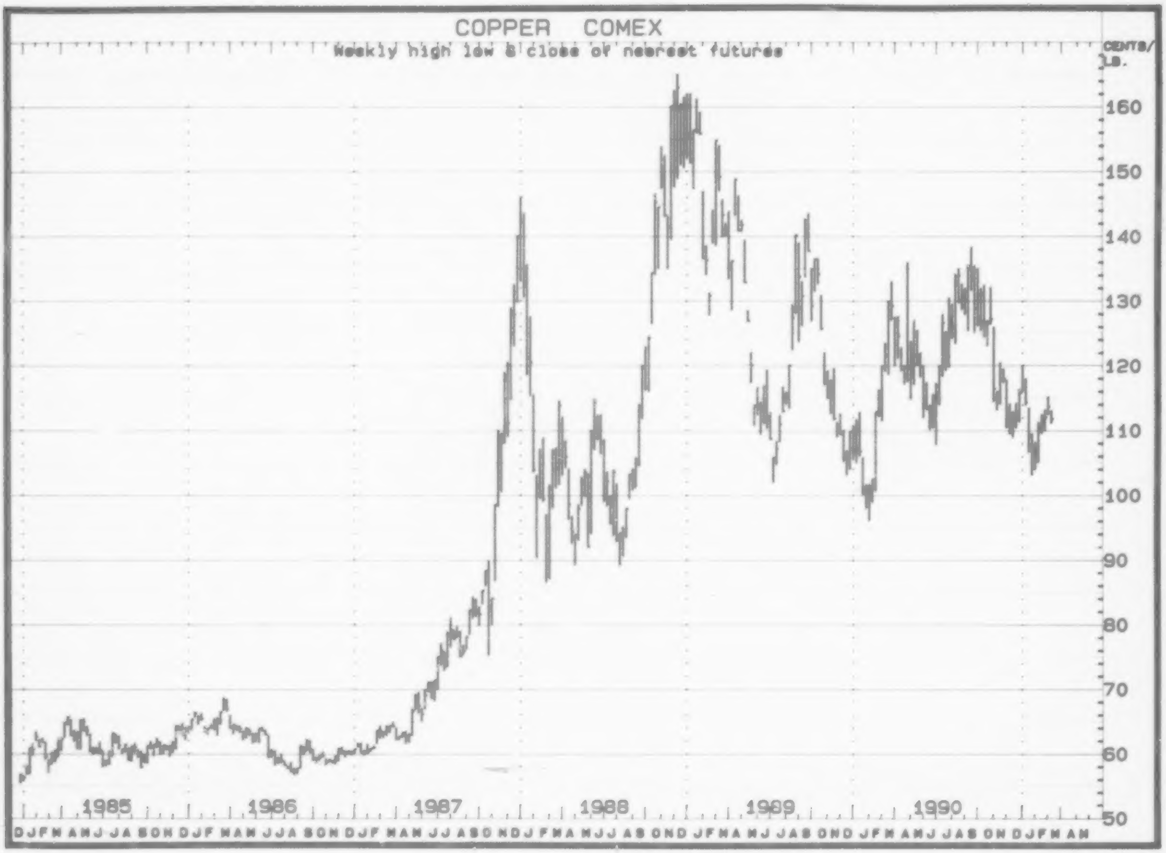
Year	Arizona	California	Colorado	Idaho	Michigan	Missouri	Montana	Nevada	New Mexico	Pennsylvania	Tennessee	Utah	Maine	Other States[2]	Total
1981	1,040.8	N.A.	N.A.	4.2	N.A.	8.4	62.5	N.A.	154.1	—	N.A.	211.3	—	56.8	1,538.2
1982	769.5	N.A.	.6	3.1	N.A.	7.9	65.0	N.A.	N.A.	—	N.A.	189.1	—	111.8	1,147.0
1983	678.2	N.A.	N.A.	3.6	—	7.7	33.3	N.A.	N.A.	—	N.A.	169.8	—	145.5	1,038.1
1984	746.5	N.A.	N.A.	3.7	—	5.8	N.A.	N.A.	N.A.	—	N.A.	N.A.	—	317.6	1,091.3
1985	795.6							Not Available						309.2	1,104.8
1986	786.1							Not Available						358.1	1,144.2
1987	751.0					Not Available			246.5					246.0	1,243.6
1988	842.7					Not Available			258.7					315.5	1,416.9
1989[1]	898.3					Not Available			259.4					339.7	1,497.5
19903	1,100														1,550

[1] Preliminary. [2] Also includes N.A. States. [3] Estimate. *Source: Bureau of Mines* T.135

U.S. Copper Refined from Scrap in Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.	Oct.	Nov	Dec.	Total
1983	37.3	39.6	48.8	36.3	33.3	34.7	29.2	31.4	38.9	45.1	24.4	31.7	401.5
1984	26.8	21.0	24.3	26.4	27.3	25.3	22.9	31.0	29.0	24.4	19.9	20.6	2[illegible]8.8
1985	29.5	29.5	32.0	31.6	31.2	34.7	32.0	30.0	29.6	25.9	28.7	28.5	377.5
1986	42.5	44.9	45.2	42.6	42.4	40.8	39.1	37.4	43.9	43.5	36.0	36.7	405.9
1987	28.7	31.6	40.1	44.3	34.0	35.1	29.5	33.2	34.5	35.8	30.8	37.1	414.7
1988	34.2	35.2	42.9	38.1	38.0	38.4	30.4	37.9	42.3	37.0	37.5	40.2	453.3
1989[1]	37.4	40.8	47.0	40.1	40.8	41.1	36.6	41.4	40.6	41.3	35.9	37.1	476.8
1990[1]	37.3	35.2	37.1	38.5	39.3	38.1	34.6	38.2	37.3				

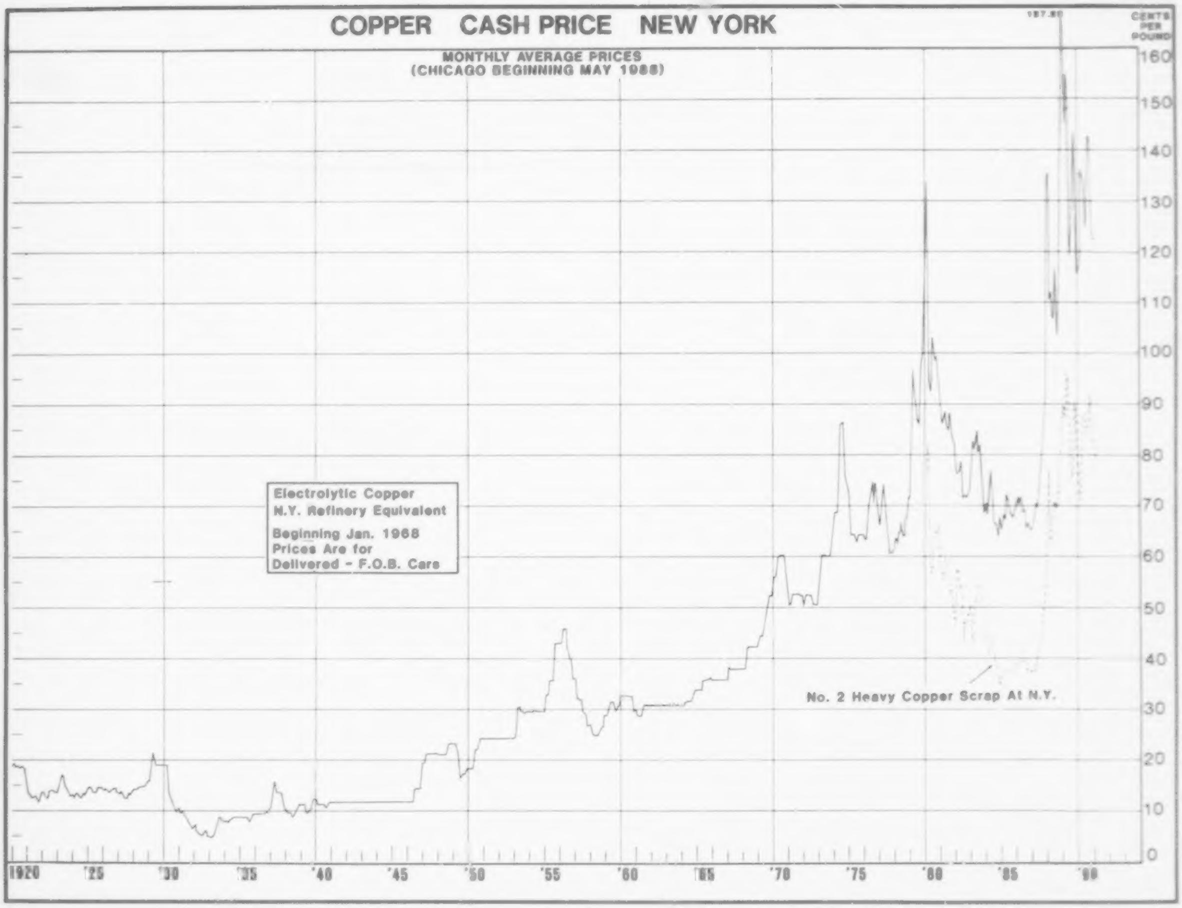
[1] Preliminary *Source: American Bureau of Metal Statistics, Inc.; Bureau of Mines*



High, Low & Closing Prices of May Copper Futures on the Commodity Exch., Inc., N.Y. (COMEX) ¢ Lb.

Year of Delivery		Year Prior to Delivery										Delivery Year					Life of Delivery Range
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1985	High	71.80	79.10	73.35	71.75	67.10	66.60	65.15	62.75	62.70	60.90	64.40	64.20	63.15	66.55	65.30	92.00
	Low	65.60	72.00	69.10	65.35	61.80	62.00	58.90	58.45	59.05	56.40	56.20	57.95	59.10	60.80	60.60	56.20
	Close	71.75	72.40	70.95	67.35	61.90	66.05	60.55	62.75	59.85	57.85	63.15	59.60	62.60	60.95	62.20	—
1986	High	65.65	68.50	68.00	64.35	66.15	64.70	62.90	63.85	63.45	65.35	68.00	67.50	69.15	66.30	63.95	69.15
	Low	62.80	63.55	63.00	61.65	61.50	61.60	60.00	61.15	60.80	61.60	64.50	64.55	63.60	62.15	61.60	60.00
	Close	65.65	63.55	63.95	62.00	63.45	63.05	60.55	61.50	62.10	64.45	67.15	66.05	66.15	62.25	62.85	—
1987	High	70.10	67.75	65.55	65.50	62.10	60.95	63.45	61.55	61.85	62.00	62.85	64.15	65.20	63.70	69.45	70.10
	Low	66.35	63.80	63.65	61.30	59.90	58.60	57.75	59.25	59.65	60.40	60.60	60.85	62.40	61.30	62.40	57.75
	Close	68.30	63.80	64.35	61.60	60.10	59.40	61.80	59.80	61.55	61.75	60.95	63.40	62.45	62.30	65.70	—
1988	High	65.65	64.50	68.35	69.50	74.25	75.65	80.30	86.50	104.40	108.20	109.00	100.80	107.30	107.50	103.90	109.00
	Low	63.25	62.80	63.50	66.05	69.90	70.50	71.90	71.80	78.50	89.10	83.00	79.10	87.40	88.50	93.00	57.75
	Close	63.25	63.30	65.35	69.20	73.70	72.70	77.90	77.20	95.60	108.20	85.85	86.30	105.30	93.80	98.80	—
1989	High	85.40	83.30	83.40	85.00	89.00	93.60	97.00	114.25	125.50	133.00	139.30	133.10	146.00	145.20	138.50	146.00
	Low	79.10	77.30	77.45	78.70	81.60	83.70	89.80	95.30	103.40	120.20	123.25	117.00	130.10	126.70	108.50	73.20
	Close	82.00	81.85	80.25	83.00	85.50	93.60	95.20	112.00	124.00	125.00	132.50	131.20	132.60	138.70	110.80	—
1990[1]	High	—	116.00	114.60	108.40	102.45	118.90	118.00	120.70	113.50	107.00	110.00	109.30	122.70	125.00	127.10	127.10
	Low	—	112.00	109.60	101.00	95.85	102.25	112.40	110.05	103.70	100.90	94.50	96.40	108.60	111.80	115.00	94.50
	Close	—	113.80	111.70	101.40	101.70	118.90	115.25	111.00	106.80	105.20	97.30	108.25	122.40	116.90	115.85	—
1991	High	—	100.65	103.40	103.00	109.80	116.80	118.55	112.90	111.00	114.60	116.25					
	Low	—	97.30	97.95	97.50	101.70	109.30	109.00	105.70	105.40	104.35	102.10					
	Close	—	98.80	98.30	103.00	109.45	114.70	109.70	108.60	105.70	113.75	105.00					

[1] HG Grade Contract. *Source: Commodity Exchange, Inc. of N.Y. (COMEX)* T.141



Producers' Prices of Electrolytic (Wirebar) Copper, Delivered U.S. Destinations In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1985	66.23	68.32	67.19	72.17	71.89	68.86	68.53	68.32	67.66	68.60	68.37	70.10	68.85
1986	71.57	70.21	71.78	70.55	68.69	69.15	65.47	64.12	66.82	65.61	65.06	65.91	67.91
1987	67.29	67.87	70.50	69.83	73.54	76.71	83.10	84.94	88.04	91.52	109.59	134.71	84.80
1988	135.63	110.58	111.99	107.51	106.91	116.46	107.90	103.62	118.04	126.38	159.08	167.80	114.50
1989	164.21	146.17	154.89	150.26	132.72	121.45	119.27	133.75	143.60	137.61	123.59	115.64	136.93
1990	116.36	119.35	136.22	134.38	132.32	124.93	133.91	142.53	142.45	138.41	127.76	124.39	131.09
1991	122.59												

Source: American Metal Market T.136

Average Open Interest of Copper Futures[1] at COMEX In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1985	88,669	93,069	81,959	88,539	82,619	83,776	81,368	78,195	76,237	77,407	77,404	79,283
1986	87,280	83,713	86,713	79,370	71,169	68,505	63,529	61,827	62,779	65,073	73,414	78,164
1987	77,851	77,433	76,967	70,108	74,628	84,725	85,391	75,725	65,678	59,073	47,279	41,781
1988	43,177	41,220	35,505	34,787	31,410	35,949	31,750	29,520	34,946	35,724	36,607	33,094
1989	33,397	33,756	34,664	35,694	30,459	27,606	24,462	25,128	23,742	19,439	14,955	2,898
1990	31,401	33,908	34,654	34,405	31,552	30,113	32,780	31,515	32,578	36,145	35,088	30,128
1991	34,927											

[1] High grade copper contracts from 1990. *Source: Commodity Exchange, Inc. of N.Y. (COMEX)* T.142

COPPER

U.S. Imports (for Consumption) of Copper (Unmanufactured), by Sources and Types   In Ths. Tonnes

Year	Ore & Concentrates	Blister	Matte	Refined	Scrap	Australia	Canada	Mexico	W. Germany	Chile	Peru	Philippines	Yugoslavia	Zaire	Zambia	South Africa	Total U.S. Imports
1981	39.1	30.1	2.7	330.6	27.0	1.5	108.5	23.8	—	137.8	52.0	20.4	2.4	24.7	44.1	—	429.6
1982	118.1	97.4	4.1	258.4	28.1	3.7	111.0	64.4	—	233.0	26.8	27.1	—	19.6	10.5	—	506.0
1983	90.6	46.4	3.3	459.6	23.1	—	153.8	44.7	—	292.4	38.9	11.4	—	29.1	24.7	14.0	622.9
1984	11.1	38.9	2.1	444.7	23.0	3.8	177.6	9.5	—	149.4	63.0	6.7	—	28.0	59.5	.5	519.8
1985	2.9	13.0	4.0	377.7	23.0												420.6
1986	4.2	34.5	.7	502.0	27.2	1.1	223.5	24.1	.3	182.5	46.9	1.0	—	36.0	28.7	10.1	568.7
1987	2.3	24.1	6.9	469.2	33.1	—	236.8	18.7	24.0	206.8	37.2	—	4.2	24.0	19.8	9.8	535.6
1988	2.8	98.5	5.5	331.7	37.2	—	204.1	14.6	5.2	131.1	16.5	—	2.0	33.4	—	10.7	475.5
1989[1]	46.5	77.2	2.3	300.1	31.6	1.2	568.2	74.4	1.3	331.9	33.8	—	—	55.3	—	3.7	457.7
1990[2]	150	50	7	295	42												540

Note: Includes refined, black, blister, & converter; scrap; & copper content of ore, matte, and regulus. [1] Preliminary. [2] Estimate. *Source: Department of Commerce, Bureau of Mines.*

T.137

United States Exports of Refined Copper[1] to Selected Countries   In Thousands of Metric Tons

Year	Total U.S. Exports	United Kingdom	China Mainland	Belgium	Brazil	Canada	France	W. Germany	Korea Rep.	Italy	Netherlands	Taiwan	Sweden	Mexico	Japan
1981	24.4	1.3	—	—	.8	6.4	1.1	1.1		.7	—	—	—	7.2	3.9
1982	30.6	1.3	16.1		.4	2.8	1.1	1.9		.1	3.3	—	—	—	.8
1983	81.4	.4	2.2	.7	—	1.7	.6	2.2		—	60.6	1.0	.1	5.3	5.7
1984	91.4	.7	.1	—	—	2.9	.8	1.2		—	6.4	3.2	—	2.8	71.2
1985	37.9	.7	—	.5	—	3.5	.3	1.3			17.3	1.5		4.2	5.0
1986	12.5	2.2	—	—	.1	3.7	.4	1.4	1.3	.1	—	2.2	.1	.2	—
1987	9.2	.9	—	—	.1	1.7	.4	.4	1.8	.2	—	.2	—	.5	2.5
1988	58.3	2.3	3.5	.2	.1	3.8	1.5	1.3	6.1	4.5	8.7	1.6	.1	8.5	13.5
1989[2]	130.2	1.1	12.8	—	—	4.7	.7	1.3	1.2	.6	.7	47.8	—	7.3	47.5
1990[3]	173														

[1] Bars, ingots or other forms. [2] Preliminary. [3] Estimate. *Source: Department of Commerce*

T.138

Dealers' Buying Price of No. 2 Heavy Copper Scrap in the Chicago Area[1]   In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1981	57.60	55.50	57.14	59.50	58.20	55.32	52.68	53.50	53.00	50.16	48.08	46.00	53.89
1982	57.43	57.20	53.76	53.99	53.38	43.24	47.12	46.49	47.83	48.79	48.61	50.75	50.73
1983	42.55	46.71	51.50	51.50	53.74	54.50	54.50	53.54	51.74	48.12	43.30	42.50	49.52
1984	41.17	40.60	43.59	44.50	43.30	42.21	39.36	38.50	38.08	36.20	34.50	35.67	39.81
1985	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50	37.50
1986	38.23	39.50	39.50	39.50	39.50	39.50	39.50	37.79	37.50	37.50	37.50	37.50	38.59
1987	37.50	37.50	37.86	39.50	41.15	42.50	44.68	49.07	49.50	53.32	55.39	64.73	46.06
1988[1]	77.10	68.00	63.50	63.12	70.07[1]	70.59	69.80	69.54	72.36	78.93	83.66	85.50	72.68
1989	89.83	87.13	95.33	95.95	91.14	80.27	74.45	75.54	86.50	90.32	86.00	80.25	86.06
1990	78.27	71.00	78.73	88.00	88.00	84.38	84.00	85.50	91.84	89.50	86.48	83.00	84.06
1991	85.00												

[1] Prior to May 1988, prices are for the N.Y. area. *Source: American Metal Market*

T.140

Volume of Trading of Copper Futures[1] at COMEX   In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	116,295	131,960	143,662	140,605	104,376	158,396	125,109	190,763	148,456	114,960	144,453	128,345	1,647,380
1982	112,118	166,562	135,434	179,854	174,157	249,276	197,828	245,973	169,909	231,771	273,546	226,257	2,362,625
1983	306,001	381,645	320,574	278,655	226,482	309,540	213,832	295,470	188,201	230,063	289,111	147,340	3,186,914
1984	199,461	259,881	217,635	269,765	196,382	223,551	152,424	215,226	149,465	170,568	279,151	172,856	2,514,311
1985	254,052	261,784	167,686	310,487	215,079	209,506	146,396	195,882	138,803	178,728	200,142	166,007	2,444,552
1986	190,983	206,513	197,818	240,770	106,750	200,547	89,818	145,468	123,779	121,361	162,963	85,439	1,872,209
1987	124,845	178,598	165,216	170,827	208,696	306,029	272,794	214,181	193,035	276,491	278,985	179,481	2,569,178
1988	210,209	222,625	194,722	151,177	130,289	179,991	120,088	142,945	141,899	186,220	258,725	173,569	2,112,459
1989	216,282	200,945	226,425	201,677	193,956[1]	174,055	132,793	173,273	151,097	176,822	154,241	93,243	2,096,547
1990	152,156	148,766	179,445	181,726	164,489	163,372	141,602	154,383	156,924	161,814	133,718	114,790	1,853,185
1991	159,621												

[1] Beginning May 1989 thru Dec. 1989 High Grade Contracts are included (May total was 353 contracts.) *Source: Commodity Exchange, Inc. of N.Y. (COMEX)*

T.143

U.S. Foreign Trade of Refined Copper In Thousands of Metric Tons

Year		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	Imports	56.1	31.8	51.0	60.3	43.5	49.6	63.0	33.6	29.1	51.9	26.9	24.6	521.3
	Exports	17.5	14.4	8.9	6.8	14.7	1.6	14.0	2.3	2.2	1.9	2.8	6.9	93.9
1985	Imports	46.7	21.8	31.8	22.3	26.8	41.5	27.2	25.7	34.6	22.0	40.4	49.9	390.7
	Exports	5.3	5.8	10.8	3.7	1.3	3.9	5.7	6.8	1.5	1.3	.9	1.1	48.1
1986	Imports	51.9	43.9	49.5	38.2	54.9	36.8	36.0	36.0	37.3	31.7	55.6	31.2	503.1
	Exports	1.3	1.5	1.2	1.0	2.4	.9	.8	1.8	1.7	.6	.9	.8	14.9
1987	Imports	34.4	38.7	55.8	38.9	60.2	69.3	37.0	45.0	28.6	35.9	40.8	31.1	515.6
	Exports	.8	1.9	2.4	2.8	.8	1.1	.6	.5	.8	.7	2.3	3.2	17.9
1988	Imports	49.4	38.0	39.0	33.7	25.9	25.1	22.3	27.7	25.7	44.2	39.2	20.2	390.4
	Exports	4.9	2.0	3.8	5.7	7.7	9.5	3.5	4.4	14.3	2.3	4.0	4.5	66.5
1990[1]	Imports	32.7	24.8	18.7	20.9	24.1	25.9	20.9	24.4	28.1	30.5	32.3	16.9	300.1
	Exports	6.2	4.8	5.9	13.5	4.3	6.6	21.4	15.8	23.4	13.7	6.3	12.1	130.2
1991[1]	Imports	24.7	15.8	26.5	25.3	31.3	24.0	20.6	18.0					
	Exports	18.1	20.8	12.2	7.6	15.6	12.2	23.9	20.1					

[1] Preliminary. *Source: U.S. Dept. of Commerce.*

Refined Copper Stocks in the U.S.A. In Thousands of Short Tons (Recoverable Copper Content)

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1975	194.9	242.7	259.2	297.8	320.6	334.6	338.2	349.5	341.8	312.3	314.9	324.6
1976	360.7	363.4	370.9	347.8	343.0	325.2	317.1	350.4	355.8	356.1	372.8	416.5
1977	473.8	469.3	487.0	472.3	442.1	447.6	435.0	408.9	370.6	409.4	418.0	456.9
1978	471.1	488.7	491.6	470.2	480.5	465.5	464.0	430.9	418.0	405.9	416.4	408.9
1979	367.0	318.4	287.5	262.1	237.4	197.8	176.0	174.6	158.0	154.6	148.6	167.3
1980	186.3	203.5	228.2	237.1	269.1	277.3	295.7	310.6	301.0	274.6	265.0	246.0
1981	253.0	261.6	249.4	236.8	245.5	243.4	264.7	276.9	276.0	275.5	281.6	301.2
1982	338.6	351.9	375.9	387.3	409.8	422.5	448.1	463.7	449.9	436.2	438.2	470.8
1983	484.5	489.6	501.6	508.9	524.1	519.4	498.7	509.0	522.7	509.1	514.2	505.2
1984	475.3	497.8	499.6	483.3	478.3	463.4	483.2	493.4	490.7	467.1	475.2	457.3
1985	469.7	452.9	380.9	368.2	358.4	363.2	344.1	331.4	310.9	275.7	257.3	264.1
1986	270.7	271.0	261.6	242.0	231.1	201.4	188.0	209.6	214.4	188.1	189.0	211.3
1987	238.4	211.5	206.8	170.1	175.7	161.6	136.4	141.0	140.4	151.3	121.1	86.7
1988	81.4	79.8	81.6	89.0	83.1	75.7	42.0	48.8	52.5	42.9	40.6	39.8
1989	56.3	67.5	56.3	60.6	54.3	54.4	49.1	61.8	66.1	42.3	48.1	48.2
1990[1]	72.7	42.4	38.6	45.2	55.9	60.2	67.5	67.2	67.6	27.4	27.9	45.4
1991[1]	72.3	72.8										

[1] Preliminary. *Source: American Bureau of Metal Statistics, Inc.* T.145

Refined Copper Stocks Outside the U.S.A. In Thousands of Short Tons (Recoverable Copper Content)

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1975	591.2	628.8	624.5	655.8	723.1	766.0	784.7	861.5	933.4	1,007	1,072	1,108
1976	1,135	1,150	1,149	1,086	1,048	1,045	1,040	1,080	1,112	1,102	1,102	1,141
1977	1,117	1,158	1,200	1,166	1,183	1,185	1,195	1,210	1,229	1,247	1,240	1,225
1978	1,201	1,231	1,139	1,139	1,104	1,099	1,052	1,059	1,001	960.2	962.0	963.1
1979	942.2	878.2	862.4	765.1	758.8	756.7	727.2	687.1	696.6	648.2	635.4	641.3
1980	619.5	598.3	560.9	534.6	516.5	525.9	531.2	530.9	553.2	527.9	489.1	472.6
1981	476.2	485.2	471.0	463.0	458.8	449.8	446.0	454.9	454.7	433.4	419.4	403.0
1982	432.5	446.3	448.4	459.6	452.0	458.7	479.3	492.0	503.6	522.7	575.1	642.9
1983	699.9	760.8	766.4	759.1	795.5	780.0	722.2	683.0	757.4	767.2	765.2	810.4
1984	832.8	817.5	730.0	653.0	618.5	519.3	551.9	526.5	516.0	493.9	483.9	430.0
1985	425.0	420.7	385.7	361.9	364.6	380.4	368.8	464.0	546.7	558.4	533.6	486.6
1986	502.8	501.5	451.8	435.7	422.6	418.7	396.8	430.4	455.1	455.4	458.5	464.8
1987	473.7	467.5	410.5	397.5	387.4	348.5	337.8	336.8	341.1	314.7	254.9	269.6
1988	260.9	292.1	301.1	290.2	277.4	317.9	329.9	374.7	348.7	310.9	282.8	272.2
1989	337.5	325.7	341.0	350.3	406.5	385.7	374.2	389.8	335.8	368.7	348.1	358.3
1990[1]	362.3	384.7	335.6	330.1	340.0	364.9	308.9	379.3	421.9	484.7	485.9	474.0
1991[1]	475.2											

[1] Preliminary. *Source: American Bureau of Metal Statistics, Inc.* T.150

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Refined Copper Production Outside the U.S.A. In Thousands of Short Tons (Recoverable Copper Content)

	Refined													Crude	
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Primary	Secondary
1982	398.2	381.0	442.6	391.8	365.2	403.9	368.4	365.8	386.1	405.8	411.8	372.6	4,693	—5,065—	
1983	386.8	366.3	411.8	400.0	401.2	418.0	381.9	404.3	395.9	404.5	393.1	409.5	4,773	—5,201—	
1984	380.3	376.9	412.4	375.1	374.1	382.5	357.4	381.5	373.8	405.2	380.8	358.7	4,559	—5,114—	
1985	371.6	338.8	388.5	376.1	377.4	351.4	384.2	385.6	380.4	387.6	385.5	394.9	4,522	—5,217—	
1986	366.5	351.5	401.7	409.7	373.1	361.2	361.7	374.8	400.3	407.4	396.4	403.6	4,608	—5,132—	
1987	385.8	375.4	410.6	412.2	399.9	403.6	393.3	370.6	391.2	402.7	402.5	407.5	4,755	—5,233—	
1988	397.7	387.8	434.2	370.6	389.4	391.5	366.6	386.9	365.9	412.8	417.0	414.9	4,735	—5,210—	
1989	387.8	372.7	411.9	404.3	430.1	388.7	409.5	413.5	421.7	436.1	434.0	402.7	4,913	—5,439—	
1990[1]	426.3	397.3	427.6	414.3	415.6	410.0	383.4	415.5	408.3	425.7	419.6	402.7	4,946	—5,278—	

[1] Preliminary. *Source: American Bureau of Metal Statistics, Inc.* T.148

Refined Copper Production in the U.S.A. In Thousands of Short Tons (Recoverable Copper Content)

	Refined													Crude	
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Primary	Secondary
1982	117.5	123.4	121.5	116.4	107.5	108.6	81.8	77.6	80.6	80.1	92.1	90.8	1,198	—1,026—	
1983	97.3	100.6	131.9	125.5	112.2	114.5	73.1	90.6	91.2	110.4	89.1	100.2	1,237	—1,077—	
1984	98.8	100.7	117.1	120.5	127.9	125.6	123.0	126.1	101.8	119.5	95.4	101.4	1,358	—1,270—	
1985	113.5	101.2	118.8	122.4	124.1	100.8	99.9	96.8	93.0	112.9	119.7	106.7	1,310	—1,387—	
1986	109.5	98.3	103.5	115.0	122.4	112.1	109.3	108.9	106.7	114.4	116.6	138.1	1,355	—1,323—	
1987	118.0	110.5	105.4	127.7	118.5	95.5	107.7	106.4	121.8	131.3	123.3	127.7	1,394	—1,308—	
1988	124.5	127.2	145.6	122.5	133.7	116.7	112.7	146.0	133.8	121.1	137.7	131.8	1,553	—1,527—	
1989	129.5	128.1	137.2	118.3	132.2	142.6	121.3	150.8	116.5	137.0	127.4	130.7	1,572	—1,555—	
1990[1]	136.0	122.0	150.4	140.1	147.5	136.1	125.5	132.5	130.1	141.6	141.0	125.5	1,628	—1,630—	
1991[1]	129.0														

[1] Preliminary. *Source: American Bureau of Metal Statistics, Inc.* T.149

Refined Copper Deliveries to Fabricators in the U.S.A.
In Ths. of Short Tons (Recoverable Copper Content)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	134.6	112.2	131.5	114.2	121.0	111.4	106.2	110.6	131.8	113.3	78.4	119.2	1,384
1983	126.2	141.1	185.3	156.0	165.9	164.4	91.0	105.2	141.2	137.1	110.2	145.3	1,669
1984	118.3	146.1	185.7	184.4	190.7	163.8	150.7	159.3	166.0	167.1	149.5	124.2	1,906
1985	170.2	188.7	159.8	153.0	144.3	135.2	122.3	130.0	153.3	151.5	137.9	120.7	1,767
1986	123.8	120.1	150.5	155.3	164.5	131.5	113.1	127.1	160.7	141.1	114.7	128.4	1,631
1987	160.2	138.7	166.9	152.3	165.6	152.3	131.6	127.2	141.4	188.3	192.7	168.2	1,885
1988	152.0	151.5	162.5	149.6	150.1	161.2	116.5	164.7	169.6	148.2	159.1	139.0	1,824
1989	127.8	147.7	148.4	141.1	153.2	168.4	131.4	173.2	162.1	156.8	149.2	121.9	1,781
1990[1]	167.4	132.8	163.3	156.6	153.3	144.5	129.5	132.5	173.3	140.9	134.7	112.6	1,741
1991[1]	136.1												

[1] Preliminary. *Source: American Bureau of Metal Statistics, Inc.* T.147

Refined Copper Deliveries to Fabricators Outside the U.S.A.
In Ths. of Short Tons (Recoverable Copper Content)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	373.4	380.1	423.6	387.4	348.3	365.4	341.4	342.8	354.9	343.5	331.3	301.6	4,294
1983	303.2	322.9	371.1	325.7	392.2	454.4	407.4	308.3	360.7	389.4	350.2	397.4	4,383
1984	375.0	448.8	477.8	377.1	453.1	358.8	372.5	371.5	382.7	394.6	420.7	360.6	4,793
1985	356.6	372.1	408.2	369.8	379.8	395.9	300.4	319.9	384.6	422.0	419.6	375.9	4,505
1986	364.5	396.9	403.4	403.2	375.6	387.9	331.0	334.1	376.2	384.9	380.9	380.8	4,519
1987	386.0	413.0	413.9	406.8	426.7	401.8	384.1	359.4	416.4	468.8	377.1	396.8	4,851
1988	359.6	375.2	448.7	385.1	366.8	403.2	340.9	405.9	401.8	437.4	455.6	356.6	4,737
1989	426.0	369.9	411.8	360.9	459.0	398.0	386.8	464.2	393.2	456.9	423.0	399.1	4,949
1990[1]	419.8	463.6	429.8	397.1	408.6	472.6	323.2	386.3	378.4	449.2	443.8	399.1	4,971

[1] Preliminary. *Source: American Bureau of Metal Statistics, Inc.* T.146

Corn

World corn production in 1990/91 was placed at 471 million tonnes, 2 percent above a year earlier and the largest in four years. Offtake in the U.S., by far the leading producer, increased by 5 percent to 201.5 million tonnes. Output in China rose by 11 percent to 88 million tonnes, and the Argentine crop increased by 38 percent to 7.2 million. However, production declined considerably in the EC, South Africa, and Thailand. Soviet output fell to 14 million tonnes from 15.3 million in 1989.

Global corn utilization was placed at 473 million tonnes, down 1 percent from the previous year, as demand in the USSR retreated.

World trade in corn was forecast to drop by 19 percent to 64 million tonnes, because of lower imports by the USSR. Soviet purchases were put at 8 million tonnes, down from 18.6 million a year earlier and the lowest since 1987/88. Imports by Japan were expected to hold steady at 16 million tonnes.

Among the major exporters, Argentina was forecast to ship 4 million tonnes, 43 percent more than the year before. With a smaller crop, South African exports were put at only 300,000 tonnes, versus 2.9 million the previous season. Thailand's shipments were projected to fall to under 1 million tonnes. However, China's exports were due to jump to 6 million tonnes from 3.2 million in 1989/90.

In the USSR, consumers wished to upgrade their diets with more livestock, poultry, and dairy products. To provide more protein, the Soviets must import or grow more grain or use what they have more efficiently. Large imports have been necessary to meet immediate needs. In 1990/91, however, the government cut its corn imports and consumed more feed-quality wheat. The activities of the USSR are perhaps the chief influence on the price of corn.

World corn stocks were projected to fall by 3 percent to 69.8 million tonnes. As recently as 1986/87, inventories were 161 million tonnes.

The 1990 U.S. corn crop was 7.93 billion bushels, above 7.53 billion the year before. Acreage planted rose by 3 percent to 74.2 million, and harvested acreage was 66.9 million. With timely rains and moderate temperatures, national average yield was 118.5 bushels per acre, versus 116 a year earlier. The record was set in 1987 at 119.8 bushels. The chief producing state in 1990 was Iowa with a harvest of 1.59 billion bushels, followed by Illinois with 1.32 billion. Other large producers were Nebraska, Minnesota, and Indiana.

Domestic stocks at the start of 1990/91 were 1.34 billion bushels, much less than the previous year's 1.93 billion. Stocks of corn have trended lower over the last four years. With the crop of 7.93 billion bushels, 1990/91 corn supplies were put at 9.28 billion, 2 percent less than a year earlier.

Use of corn for domestic purposes was expected to rise, as livestock production increased. At the same time, however, the price of wheat was very low relative to corn, reducing the amount of corn fed in rations. Corn use for feeding purposes was likely to total 4.85 billion bushels, or 9 percent more than in 1989/90.

Corn used for food, seed, and industrial purposes was due to rise by over 2 percent to 1.32 billion bushels. Ethanol, considered a clean fuel, can be used to extend petroleum supplies, and passage of legislation to improve air quality will mean more use of ethanol.

U.S. exports of corn were expected to decline by a sharp 23 percent in 1990/91 to 1.83 billion bushels, as the Soviets bought less. A large grain crop in the USSR and low world prices for feed wheat explained the drop in Soviet corn purchases. Over the previous two years, the USSR was the chief U.S. corn customer, taking an average of almost 16 million tonnes each season.

Trade sanctions against Iraq, which had bought about 600,000 tonnes of U.S. corn a year, reduced total exports in 1990/91.

Domestic ending stocks of corn were put at 1.29 billion bushels, 4 percent less than in 1989/90.

U.S. Government Program

The 1990 Farm Bill made major changes in the 1991-95 corn program. The basic loan rate will be calculated using a five-year moving average of previous prices. The high and low years are excluded. The loan rate will be adjusted taking into consideration the stocks-to-use ratio and the competitiveness of U.S. grain. The basic loan rate cannot fall by more than 5 percent from the previous year. The target price for 1991-95 was frozen at a minimum of $2.75/bu. Producers will have more flexibility in determining how much acreage to plant and what crops to grow.

Futures Markets

Corn futures and options are traded on the Chicago Board of Trade, and futures are traded on the Mid America Exchange.

World Production of Corn or Maize In Millions of Metric Tons

Crop Year	Argentina	Brazil	Canada	China	France	Hungary	India	Indonesia	Italy	Mexico	Romania	South Africa	Thailand	United States	USSR	Yugoslavia	World Total
1988–9	5.0	26.1	5.4	77.4	14.5	6.0	8.3	5.2	6.3	10.1	10.0	12.4	4.2	125.0	16.0	7.7	400.7
1989–90[1]	5.2	22.2	6.4	78.9			8.0	4.8		9.8		9.2	4.0	191.2	15.3		461.1
1990–1[2]	6.5	24.5	6.8	86.0			8.0	5.0				7.0	3.7	201.6	14.0		467.4

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.151

CORN

World Coarse Grains Supply & Demand In Millions of Metric Tons/Hectares

Crop Year	Area Harvested	Yield	Production	World Trade[1]	Utilization Total[2]	Ending Stks[3]	Stocks as % of Util
1983/84	335.2	2.05	688.2	93.4	759.3	110.7	14.6
1984/85	334.6	2.44	815.8	100.4	782.6	143.9	18.4
1985/86	341.3	2.47	843.1	83.2	778.8	208.2	26.7
1986/87	336.5	2.47	831.8	83.3	806.0	234.0	29.0
1987/88	324.3	2.45	793.9	83.2	814.9	213.0	26.1
1988/89[4]	326.1	2.24	731.4	94.5	797.6	146.7	18.4
1989/90[4]	323.4	2.48	800.6	100.3	826.7	120.5	14.6
1990/91[5]	322.0	2.55	820.7	89.4	824.4	116.9	14.2

Note: "Stocks as percent of utilization" represent the ratio of marketing year ending stocks to total utilization. [1] Trade data as expressed in this table exclude intra-EC trade. The trade year is October/September. [2] For countries for which stocks data are not available (excluding the USSR) utilization estimates represent "apparent" utilization, i.e., include annual stock level adjustments. [3] Stocks data are based on an aggregate of differing local marketing years and should not be construed as representing world stock levels at a fixed point in time. Stocks data are not available for all countries and exclude those such as the People's Republic of China and parts of Eastern Europe. World Stock Levels have been adjusted for estimated year-to-year changes in USSR grain stocks, but do not purport to include the absolute level of USSR grain stocks. [4] Preliminary. [5] Projection. *Sources: Prepared or estimated on the basis of official statistics of foreign governments, other foreign source materials, reports of U.S. Agricultural Attaches and Foreign Service Officers, results of Office Research and Related Information.* 150a

Acreage and Supply of Corn in the United States In Millions of Bushels

Year Beginning Sept.[5]	Planted All Purposes	Harvested For Grain	Harvested For Silage	Harvested For Forage	Yield, Per Harv. Acre-Bus.	Carry-over, Sept. 1 On Farms[5]	Carry-over, Sept. 1 Off Farms[5]	Carry-over, Sept. 1 Others[5]	Carry-over, Sept. 1 Total	Grain Production	Imports[2]	Total (All Supply Grain)
	In Millions of Acres											
1983–4	60.2	51.5	7.8	.3	81.1	1,510.4	—1,609.5—		3,523	4,174	1.7	7,699
1984–5	80.5	71.9	7.5	.3	106.7	347.9	— 375.4—		1,006	7,672	1.7	8,680
1985–6	83.4	75.2	7.2	.3	118.0	678.9	— 701.8—		1,648	8,875	10.0	10,534
1986–7	76.7	68.9	6.4		119.4	2,049.4	—1,990.1—		4,040	8,226	1.7	12,267
1987–8	65.7	59.5	6.0		119.8	2,284.5	—2,597.2—		4,882	7,131	3.4	12,016
1988–9	67.6	58.3	8.3		84.6	2,002.8	—2,256.8—		4,259	4,929	2.8	9,191
1989–90[1]	72.3	64.8	6.6		116.2	967.5	— 962.9—		1,930	7,527	2.0	9,460
1990–1[4]	74.5	66.7			119.0	754.8	— 589.7—		1,344	7,934	2.0	9,281

[1] Preliminary. [2] Includes grain equivalent of cornmeal & flour. [3] Interior mills & elevators and terminal mkts. [4] Estimate. [5] Data prior to 1986–7 are as of Oct 1. *Source: Economic Research Service, U.S.D.A.* T.152

U.S. Corn Supply and Disappearance In Millions of Bushels

Year & Periods Begin. Sept. 1	Supply Beginning Stocks	Supply Production	Supply Imports	Supply Total Supply	Disappearance Domestic Use Food, Alcohol & Industrial	Disappearance Domestic Use Seed	Disappearance Domestic Use Feed & Residual	Disappearance Domestic Use Total	Disappearance Exports	Disappearance Total Disappearance	Ending Stocks Gov't. Owned[1]	Ending Stocks Privately Owned[2]	Ending Stocks Total
1986–7	4,040	8,226	1.7	12,267	1,175	16.7	4,701	5,893	1,492	7,385	1,443	3,439	4,882
Sep–Nov.	4,040	8,226	.7	12,290	280.0	0	1,362	1,664	321.1	1,985	968.2	9,337	10,306
Dec.–Feb.	10,306	—	.2	10,306	270.0	0	1,475	1,742	315.4	2,058	1,362	6,886	8,248
Mar.–May	8,248	—	.4	8,249	310.0	16.4	1,094	1,416	500.2	1,917	1,492	4,841	6,332
June–Aug.	6,332	—	.4	6,333	315.0	.3	768.0	1,083	367.7	1,451	1,443	3,439	4,882
1987–8	4,882	7,131	3.4	12,016	1,212	17.2	4,812	6,041	1,716	7,757	835.0	3,424	4,259
Sep.–Nov.	4,882	7,131	.6	11,954	292.0	0	1,493	1,785	398.0	2,183	1,683	8,088	9,771
Dec.–Feb.	9,771	—	.9	9,772	282.0	0	1,446	1,728	408.3	2,136	1,768	5,868	7,636
Mar.–May	7,636	—	1.6	7,637	315.0	16.7	956.2	1,288	513.8	1,802	1,305	4,531	5,836
June–Aug.	5,836	—	.9	5,836	323.0	.5	838.4	1,163	414.4	1,577	835.0	3,424	4,259
1988–9[3]	4,259	4,929	2.8	9,191	1,232	18.7	3,981	5,232	2,028	7,260	362.5	1,568	1,930
Sep.–Nov.	4,259	4,929	.6	9,188	295.0	0	1,351	1,646	470.8	2,117	611.0	6,461	7,072
Dec.–Feb.	7,072	—	.6	7,072	285.0	0	1,081	1,366	502.6	1,868	465.0	4,739	5,204
Mar.–May	5,204	—	1.2	5,205	322.2	16.8	855.2	1,194	591.6	1,786	417.7	3,002	3,419
June–Aug.	3,419	—	.4	3,420	330.2	1.9	693.8	1,026	463.4	1,489	362.5	1,568	1,930
1989–90[4]	1,930	7,527	2.0	9,460	1,271	19.0	4,458	5,748	2,367	8,115	233.0	1,112	1,345
Sep.–Nov.	1,930	7,527	.6	9,458	298.0	0	1,499	1,797	582.3	2,379	628.2	6,451	7,079
Dec.–Feb.	7,079	—	.5	7,080	297.0	0	1,289	1,586	681.6	2,267	537.2	4,276	4,813
Mar.–May	4,813	—	.6	4,813	338.3	16.7	1,014	1,369	600.8	1,970	299.3	2,544	2,843
June–Aug.	2,843	—	.2	2,843	337.7	2.3	656.3	996.3	502.6	1,499	233.0	1,112	1,345

[1] Uncommitted inventory. [2] Includes quantity under loan & farmer-owned reserve. [3] Preliminary. [4] Estimate.
Source: Economic Research Service, U.S.D.A. T.154

Corn Production Estimates and Cash Prices in the U.S.

Crop Year	Corn for Grain Production Estimates						St. Louis No. 2 Yellow	Gulf Ports No. 2 Yel. (Export	Los Angeles [illegible]. 2 Yel.	Season Farm Avg. Price[1]	K.C. White No. 2	Value of Production (Million Dollars)
	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1	Final						
	In Thousands of Bushels						[illegible]shel					
1981–2	7,734,941	7,940,421	8,081,444	8,097,231	8,200,951	8,118,650	2.63	2.8[illegible]	[illegible].92	2.50	2.60	20,200
1982–3	8,315,088	8,318,678	8,314,938	8,329,808	8,397,334	8,235,101	2.87	3.06	3.93	2.55	3.35	22,039
1983–4	5,236,558	4,390,443	4,259,408	4,120,983	4,203,777	4,174,678	3.49	3.67	4.22	3.21	4.70	13,535
1984–5	7,667,721	7,551,991	7,497,831	7,527,206	7,649,995	7,674,020	2.81	3.00	3.78	2.63	3.27	20,085
1985–6	8,265,554	8,468,504	8,602,994	8,716,534	8,865,006	8,876,706	2.37	2.52	3.43	2.23	2.49	19,522
1986–7	8,316,156	8,268,141	8,220,201	8,222,576	8,252,834	8,249,864	1.68	1.83	2.69	1.50	2.17	12,541
1987–8	7,230,950	7,140,505	7,139,255	7,166,020	—	7,064,143	2.19	2.39	3.22	1.94	2.55	13,985
1988–9	4,479,385	4,462,475	4,552,735	4,671,235	—	4,921,191	2.72	2.93		2.54		12,499
1989–90[2]	7,348,155	7,321,005	7,448,875	7,589,715	—	7,527,152	2.59	2.84		2.36		17,764
1990–1[2]	7,850,164	8,118,117	8,021,697	7,934,892	—					2.30		18,2[illegible]0

[1] Includes an allowance for unredeemed loan & purchase agreement deliveries valued at the average loan rate. [2] Preliminary.
Source: Economics Research Service; Crop Reporting Board, U.S.D.A. T.153

Production of Corn (For Grain) in the United States, by States In Millions of Bushels

Year	Illinois	Indiana	Iowa	Kansas	Kentucky	Michigan	Minn.	Missouri	Nebraska	No. Car.	Ohio	Pa.	So. Dak.	Wisconsin	Texas
1981	1,454	654.0	1,759	148.1	149.0	273.6	744.7	213.4	791.2	140.9	360.0	134.4	180.6	378.0	127.5
1982	1,499	790.0	1,578	139.1	154.5	293.2	734.5	199.0	748.0	155.4	456.0	126.1	193.7	361.8	119.7
1983	624.1	340.9	7[illegible]3.9	85.6	46.1	165.6	367.1	72.9	470.5	76.8	224.0	72.5	104.4	223.1	104.8
1984	1,247	705.5	1,445	119.4	146.0	220.1	689.1	154.4	806.2	145.8	460.2	148.5	186.3	344.5	144.2
1985	1,535	756.5	1,707	152.1	159.1	286.7	724.5	272.8	953.6	128.4	511.8	151.8	252.0	358.5	156.5
1986	1,404	695.4	1,627	181.6	139.8	257.3	707.6	280.7	896.0	93.8	476.2	127.7	233.7	365.8	149.0
1987	1,201	631.8	1,307	141.6	118.6	185.3	635.0	243.0	812.2	69.0	362.4	95.4	228.3	330.4	133.8
1988	700.8	415.0	898.8	143.8	80.3	112.0	347.8	153.5	818.4	81.5	255.0	59.2	132.0	130.7	129.6
1989	1,322	691.6	1,446	155.0	136.9	222.6	700.0	219.8	852.0	88.4	342.2	98.9	190.8	310.8	148.4
1990[1]	1,321	708.5	1,587	188.5	116.4	235.8	762.5	200.9	949.0	67.4	418.2	105.8	218.4	336.4	142.5

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.157

Distribution of Corn in the United States In Millions of Bushels

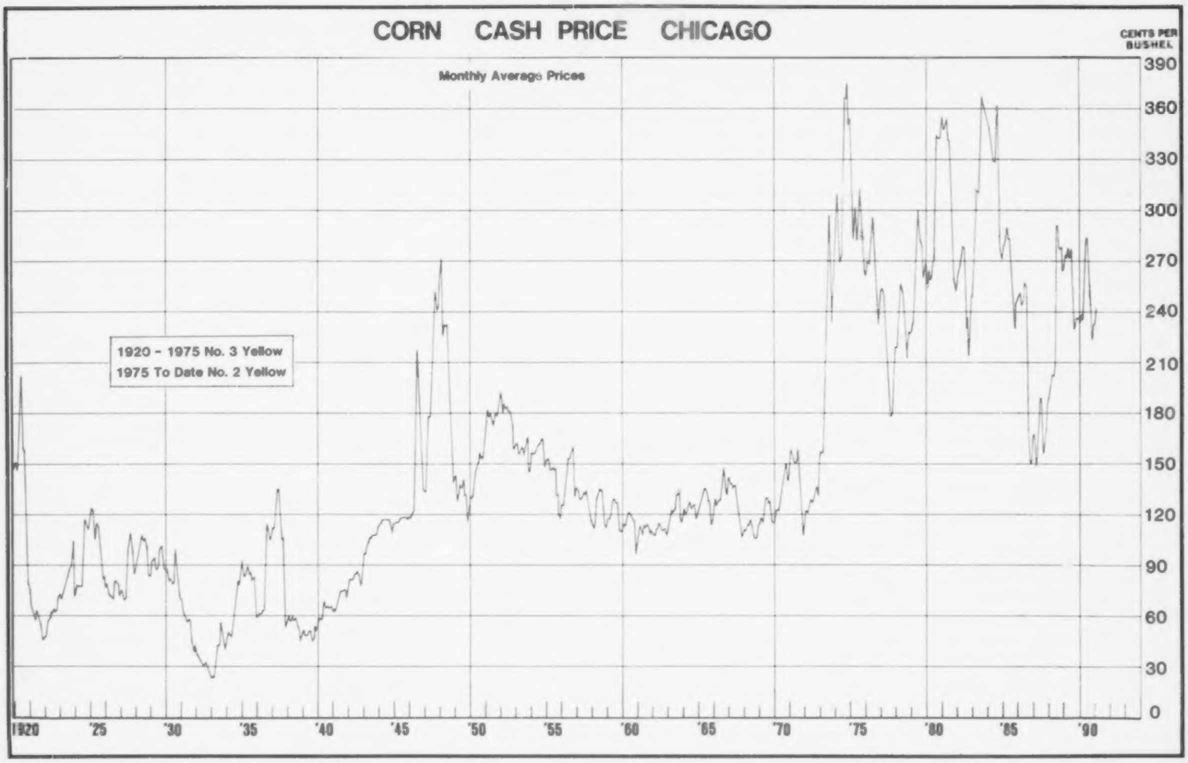
Year Beg. Sept.	Wet-Milled Products					Dry-Milled Products			Total Shipments	Seed	Livestock Feed[3]	Exports (Incl. Grain Equiv. of Pdt's.)	Total Utilization	Domestic Disappearance
				Alcohol		Alcohol								
	HFCS	Glucose & Dextrose	Starch	Fuel	Beverage[2]	Fuel	Beverage	Alkaline Cooked Pdt's.						
1981–2	185	183	130	55	30	25	10	162	797	19.4	4,181	1,997	6,975	4,978
1982–3	215	188	127	100	30	40	10	170	895	14.5	4,533	1,821	7,249	5,428
1983–4	256	189	147	120	30	40	10	164	975	19.1	3,831	1,886	6,693	4,806
1984–5	310	187	143	140	30	90	10	160	1,091	21.2	4,091	1,850	7,032	5,182
1985–6	328	188	152	155	30	115	10	161	1,160	19.5	4,153	1,182	6,494	5,312
1986–7	339	185	155	——200——		125	10	161	1,191	16.7	4,701	1,492	7,385	5,893
1987–8	359	187	167	——200——		— 136 —		163	1,229	17.2	4,812	1,716	7,757	6,041
1988–9	362	196	164	——210——		— 139 —		161	1,251	18.7	3,981	2,028	7,260	5,232
1989–90[1]	370	206	172	——222——		— 140 —		161	1,290	19.0	4,458	2,367	8,115	5,748
1990–1[4]	380	210	173	——235——		— 142 —		161	1,320	19.0	4,700	2,025	8,045	6,020

[1] Preliminary. [2] Also includes nonfuel industrial alcohol. [3] Feed & waste (residual, mostly feed). [4] Forecast.
Source: Economics Research Service, U.S.D.A. T.155

U.S. Exports[1] of Corn (Including Seed), By Country of Destination In Thousands of Metric Tons

Yr. Begin. Sept.	Algeria	Brazil	Bulgaria	China	Egypt	German Dr	Israel	Japan	Mexico	Rep. of Korea	Saudi Arabia	Spain	Taiwan	USSR	Total Exports
1984–5	500	209	69	0	1,352	468	264	11,095	1,267	1,602	307	2,353	3,134	15,750	45,960
1985–6	311	1,062	370	0	1,390	320	270	8,535	1,446	1,223	206	1,759	2,591	6,808	29,388
1986–7	971	1,162	279	1,088	2,247	542	408	12,414	3,028	3,915	307	411	3,176	4,102	39,062
1987–8	1,029	0	756	279	822	447	418	15,830	2,772	4,664	611	1,627	4,004	5,184	43,846
1988–9	1,001	20	1,180	0	1,240	617	282	13,893	2,804	4,695	598	1,553	4,002	16,674	52,577
1989–90	1,229	0	23	410	1,151	952	321	14,342	4,641	5,863	773	1,558	5,024	16,486	58,726

[1] Exports of grain only. Does not include corn exported under the food for relief or charity program. *Source: U.S. Bureau of Census.* T.165



Average Cash Price of Corn, No. 2 Yellow in Central Illinois[2] In Cents Per Bushel

Crop Yr	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average[1]
1982–3	217	207	238	244	254	274	298	312	311	328	333	360	298
1983–4	352	347	351	338	330	329	352	361	361	362	345	323	346
1984–5	295	281	279	272	279	279	284	290	285	283	276	250	279
1985[2]	2.28	2.10	2.32	2.38	2.36	2.33	2.29	2.31	2.42	2.41	1.93	1.52	2.22
1986	1.34	1.34	1.55	1.52	1.44	1.38	1.46	1.56	1.75	1.74	1.60	1.46	1.51
1987	1.50	1.64	1.74	1.78	1.84	1.90	1.92	1.92	1.97	2.66	2.85	2.70	2.04
1988	2.68	2.70	2.54	2.56	2.62	2.60	2.64	2.58	2.64	2.53	2.44	2.30	2.57
1989	2.35	2.25	2.29	2.29	2.29	2.34	2.44	2.64	2.73	2.70	2.68	2.54	2.46
1990[1]	2.26	2.20	2.16	2.22									
1990–1[1]													

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[1] Preliminary. [2] Data prior to 1985–6 are for Chicago (15 days). *Source: Economic Research Service, U.S.D.A.* T.161

Average Cash Price of Corn, No. 2 Yellow at Gulf Ports[2] In Dollars Per Bushel

Crop Yr	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
1982–83	2.23	2.12	2.35	2.37	2.42	2.62	2.82	3.09	3.10	3.11	3.18	3.39	2.73
1983–84	3.32	3.23	3.24	3.17	3.11	3.03	3.25	3.33	3.35	3.37	3.22	3.11	3.23
1984–85	2.94	2.71	2.61	2.55	2.60	2.61	2.68	2.73	2.68	2.70	2.61	2.39	2.65
1985[2]	2.59	2.50	2.69	2.75	2.72	2.63	2.56	2.57	2.68	2.63	2.12	1.85	2.52
1986	1.68	1.66	1.83	1.81	1.73	1.70	1.83	1.89	2.06	2.06	1.95	1.81	1.83
1987	1.86	1.99	2.08	2.11	2.20	2.23	2.29	2.28	2.29	3.05	3.22	3.02	2.39
1988	3.08	3.07	2.89	2.99	3.01	2.99	3.02	2.93	2.99	2.87	2.73	2.57	2.93
1989	2.62	2.99	2.75	2.76	2.69	2.70	2.72	3.01	3.08	3.05	2.92	2.79	2.84
1990[1]	2.59	2.55	2.33	2.41									
1990–91													

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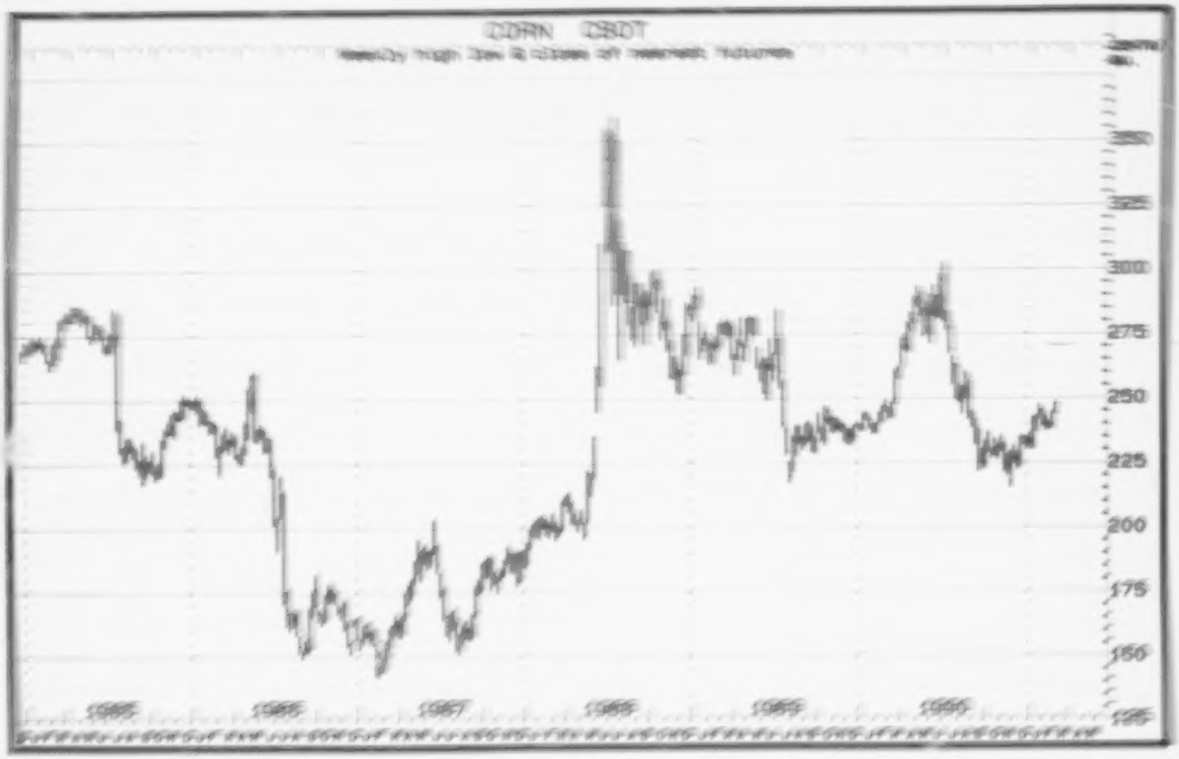
[1] Preliminary. [2] Data prior to 1985–6 are for Omaha. *Source: Economic Research Service, U.S.D.A.* T.161a

Weekly Outstanding Export Sales & Cumulative Exports—U.S. Corn   In Thousand Metric Tons

Marketing Year 1989/90 Week Ending	1989/90 Outst. Sales	1989/90 Cumul. Exports	Marketing Year 1988/89 Week Ending	1988/89 Outst. Sales	1988/89 Cumul. Exports	Marketing Year 1990/91 Week Ending	1990/91 Outst. Sales	1990/91 Cumul. Exports
Sept. 7,'89	6,780	392	Sept. 1,'88	10,092	39	Sept. 6, 1990	8,485	382
14	6,395	1,128	8	11,310	368	13	8,501	981
21	7,187	1,786	15	11,567	1,534	20	8,249	1,616
28	8,004	2,489	22	11,531	2,400	27	8,196	2,287
Oct. 5	10,861	3,339	29	12,089	3,374	Oct. 4	7,813	2,965
12	11,960	3,983	Oct. 6	11,265	4,387	11	8,002	3,572
19	15,215	4,956	13	11,046	5,346	18	8,520	4,018
26	16,223	5,797	20	10,882	6,553	25	8,205	4,778
Nov. 2	15,469	7,273	27	10,503	7,710	Nov. 1	8,093	5,359
9	15,165	8,697	Nov. 3	9,921	8,709	8	7,870	6,312
16	14,916	10,113	10	9,747	9,595	15	7,576	7,339
23	13,846	11,941	17	10,919	10,663	22	7,459	8,333
30	14,955	14,335	24	10,101	11,734	29	7,434	9,440
Dec. 7	14,731	15,796	Dec. 1	9,598	12,822	Dec. 6	7,207	10,649
14	13,715	17,724	8	8,919	13,830	13	6,847	11,638
21	13,045	19,079	15	8,581	14,728	20	7,251	12,425
28	12,745	19,906	22	10,062	15,669	27	6,778	13,039
Jan. 4,'90	11,973	21,216	29	11,806	16,323	Jan. 3, 1991	6,451	13,650
11	11,214	22,773	Jan. 5,'89	11,889	17,013	10	10,081	14,745
18	10,810	24,317	12	12,217	17,988	17	9,870	15,830
25	10,902	25,710	19	11,790	19,112	24	10,376	16,377
Feb. 1	10,546	27,174	26	10,914	21,735	31	10,313	17,291
8	10,572	28,186	Feb. 2	10,125	21,735	Feb. 7	10,076	18,325
15	10,581	29,407	9	9,523	22,840	14	9,744	19,406
22	10,020	30,610	16	9,409	23,715	21	9,148	20,714
Mar. 1	10,125	31,672	23	8,931	24,851	28	8,898	21,759
8	10,069	32,800	Mar. 2	8,559	25,947	Mar. 7		
15	9,892	33,760	9	8,109	27,034	14		
22	9,706	34,794	16	7,520	28,296	21		
29	9,758	35,993	23	7,442	29,052	28		
Apr. 5	9,654	37,186	30	8,683	30,199	Apr. 4		
12	10,476	38,377	Apr. 6	8,848	31,228	11		
19	10,259	39,555	13	8,535	32,329	18		
26	9,986	40,342	20	8,590	33,327	25		
May 3	9,823	41,286	27	9,165	34,362			
10	11,489	42,648	May 4	9,897	35,798			
17	11,376	43,863	11	9,328	36,697			
24	10,686	45,220	18	9,249	37,574			
31	10,664	46,396	25	8,494	39,295			
June 7	9,101	47,842	June 1	8,267	40,350			
14	8,120	49,316	8	8,001	41,840			
21	7,520	50,303	15	7,420	43,210			
28	6,793	51,349	22	6,653	44,500			
July 5	6,850	52,135	29	5,911	45,574			
12	6,885	52,874	July 6	5,359	46,542			
19	5,318	53,922	13	4,867	47,347			
26	4,754	54,595	20	4,459	48,378			
Aug. 2	4,385	55,239	27	4,172	49,408			
9	3,556	55,902	Aug. 3	3,852	49,858			
16	3,044	56,869	10	3,247	50,724			
23	2,485	57,630	17	2,729	51,401			
30	1,467	58,630	24	2,410	51,937			
			31	8,798	[illegible]			

Source: U.S.D.A. Export Sales Report (U.S.D.A.)



High, Low & Closing Prices of May Corn Futures at Chicago In Cents per Bushel

Year of Delivery		Year Prior to Delivery										Delivery Year					Life of Delivery Range
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1988	High	187	199	221	225½	202¼	188½	195¼	203	204¼	202	208	210¼	212	213	219	225½
	Low	175½	182½	185¼	188½	184¼	177½	180	189	185¼	189½	190¼	201	202	198½	195½	174
	Close	184¾	197½	203	202¾	188¾	181½	193¼	190	202	191¼	202½	209¼	209¼	202¾	216	—
1989	High	235	240½	259	366	369	319¾	312½	303¼	294¾	291¼	298	287¼	284½	280¼	287¼	369
	Low	223½	235¼	234¾	253	281	285	290	279¼	267½	268½	270	269	264½	258½	271½	207¼
	Close	232¼	238½	258½	345¼	291¼	[illegible]	293¼	288½	274¼	280¼	281½	278½	268½	269¼	274¾	—
1990	High	286	283	271½	268¼	265¼	253½	252¾	257	249½	247¼	250¼	264½	261¾	283	293	293
	Low	262	260	245½	243½	230	231	239	241½	241¼	239¼	241¾	241¼	248	262¼	278¼	230
	Close	267	267¾	246	261¼	232¼	240½	247	245¾	244½	245½	243¾	253½	261¼	281¼	280	—
1991	High	267	282¾	290½	300	306½	268¾	252¾	250¾	252	248½	255½	253¾				
	Low	258½	265½	278½	272	261½	248½	237½	237¾	235	230½	236	245½				
	Close	262½	279½	277¾	288½	269	249½	243½	245½	245½	230½	252½	251				

Source: Chicago Board of Trade T.169

Corn (Shelled & Ear) Stocks in the United States In Millions of Bushels

Year	On Farms				Off Farms				Total Stocks			
	Mar. 1	June 1	Sept. 1	Dec. 1	Mar. 1	June 1	Sept. 1	Dec. 1	Mar. 1	June 1	Sept. 1	Dec. 1
1985	N.A.	2,008	N.A.	N.A.	N.A.	828	N.A.	N.A.	N.A.	2,836	1,648	8,616
1986	N.A.	3,143	2,049	6,796	N.A.	1,847	1,990	3,510	6,587	4,990	4,040	10,306
1987	6,024	3,492	2,286	6,100	3,224	2,840	2,597	3,668	9,248	6,332	4,882	9,768
1988	4,421	3,241	2,068	4,280	3,216	2,598	2,256	2,791	7,636	5,839	4,259	7,072
1989[1]	3,621	2,022	987.6	4,680	2,183	1,397	962.9	2,383	6,204	3,419	1,930	7,062
1990[1]	2,911	1,624	754.8	4,874	1,902	1,220	589.7	2,066	4,812	2,843	1,344	6,940

[1] Preliminary. Source: Crop Reporting Board, U.S.D.A. T.170

Volume of Trading of Corn Futures at Chicago In Millions of Bushels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	2,802	3,390	3,684	3,255	2,784	3,598	3,122	3,552	3,127	3,239	4,634	2,584	39,741
1983	3,638	3,214	5,356	4,940	3,943	4,511	5,827	7,431	5,882	5,190	5,734	3,518	59,623
1984	2,518	3,866	4,248	4,407	4,259	4,111	4,368	3,975	3,289	2,883	3,619	2,459	45,348
1985	2,466	2,389	2,746	2,508	2,346	2,484	3,231	2,748	2,629	2,597	3,545	2,248	31,964
1986	2,629	2,153	2,203	2,840	3,029	2,390	2,695	2,217	2,466	3,103	2,591	2,555	30,891
1987	2,343	2,901	3,088	3,646	3,579	3,984	2,978	2,498	2,620	3,380	2,923	2,327	36,266
1988	3,040	3,333	3,212	3,478	4,235	7,898	6,818	5,352	4,353	4,661	5,597	3,549	55,528
1989	4,170	3,384	3,818	4,138	3,930	4,485	4,323	3,433	2,827	4,702	4,352	2,793	46,354
1990[1]	3,248	3,991	4,623	5,742	7,146	6,767	5,509	4,541	3,028	3,939	5,682	2,899	57,114
1991[1]	4,284	3,484											

[1] Preliminary. *Source: Chicago Board of Trade* T.164

Average Open Interest of Corn Futures at Chicago In Millions of Bushels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
'82	672,910	705,913	620,190	643,218	582,807	563,480	560,699	600,022	589,747	635,224	691,162	657,055
'83	716,424	800,532	817,023	866,363	805,530	754,156	727,343	994,808	1,131,512	1,147,910	1,167,236	1,075,548
'84	1,037,167	995,724	997,533	1,003,501	807,738	759,022	681,895	723,519	698,227	737,381	715,814	629,253
'85	667,033	655,735	592,298	630,084	525,072	513,082	549,368	627,919	639,756	637,095	716,065	656,807
'86	603,350	562,749	545,073	572,669	548,970	586,031	574,077	607,718	621,703	712,114	773,156	596,845
'87	651,105	703,597	692,102	706,486	650,705	632,792	568,933	591,430	593,557	689,305	690,809	631,781
'88	728,517	759,008	787,238	813,253	826,970	1,072,313	1,229,357	1,174,962	1,164,763	1,236,846	1,211,708	1,112,098
'89	1,081,102	994,058	963,200	917,720	819,439	783,908	719,030	727,027	706,896	857,567	971,254	839,719
'90	890,470	1,014,224	1,149,729	1,260,776	1,250,101	1,212,310	1,063,743	1,039,755	1,033,015	1,056,112	1,151,665	1,019,404
'91	1,050,031	1,096,179										

Source: Chicago Board of Trade T.163

Corn Price Support Data in the United States

Year Begin. Oct. 1	National Avg. Loan Rate	Grain Reserve Loan Rate	Target Price	Placed Under Loan	% of Production	Acquired by CCC	Total Deliv-ered	[illegible]	[illegible]	[illegible]	[illegible]	CCC Inventory As of Dec. 31: CCC Owned	CCC Inventory As of Dec. 31: Under CCC Loan
	$ Per Bushel			Millions of Bushels									
1982-3	2.55	2.90	2.70	1,578	18.9	249	(3)	15,485	45,289	1,150	3,523	429	2,400
1983-4	2.65		2.86	182	3.8	9		369	1,058	201	1,006	1,230	1,450
1984-5	2.55		3.03	1,100	14.8	65		2,290	6,270	240	1,648	226	1,056
1985-6	2.55		3.03	3,171	35.7	380		56,868	186,478	546	4,040	477	2,811
1986-7	1.92		3.03	4,284	52.3	1,332		50,488	114,811	1,443	4,882	1,265	4,206
1987-8	1.82		3.03	4,186	59.2	787		290,223	863,746	855	4,259	1,343	4,436
1988-9[1]	1.77		2.93	760	15.4	150		16,757	35,688	363	1,930	679	982
1989-90[1]	1.65		2.84							235	1,345		
1990-1[4]	1.57		2.75							400	1,260		

[1] Preliminary. [2] Includes "delivered to CCC" from original program and deliveries from reseal program and over-deliveries as determined by weight of farm-stored grain when delivered to CCC. [3] Less than 500,000 bushels. [4] Projected.
Source: Agricultural Stabilization and Conservation Service, U.S.D.A. T.159

Corn Under Price Support through the End of the Month (Cumulative Total from Current Season's Crop) In Millions of Bushels

Crop Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1982-3		15.5	76.2	324.5	870.2	1,369	1,505	1,551	1,561	1,567	1,579			
1983-4		.4	14.6	58.1	99.3	138.0	149.1	158.8	160.2	161.1	161.3			
1984-5		9.3	47.2	278.5	631.5	969.6	1,026	1,055	1,063	1,068	1,070			
1985-6	11.1	56.9	369.3	1,069	2,016	2,056	2,828	2,916	2,996	3,278	3,040			
1986-7	8.1	59.9	636.6	1,589	2,810	3,929	4,456	4,612	4,766	4,814	4,839	4,860		
1987-8	3.8	200.3	967.9	2,385	3,051	3,899	4,092	4,140	4,168	4,181	4,187	4,187		
1988-9	1.3	16.0	96.3	266.2	595.7	704.7	733.4	749.8	752.9	754.0	756.0	756.0		
1989-90	2.3	11.3	75.9	434.0	668.0	870.9	896.4	916.4	918.6	919.5	919.9	919.9		
1990-1	1.4	6.9	56.7	431.0										

Source: U.S. Department of Agriculture T.160

Corn Oil

Supply & Distribution of Corn Oil In Millions of Pounds

Year Beginning Oct.	Supply: Production	Supply: Imports	Supply: Stocks Oct. 1	Supply: Total Supply	Food Uses: Shortening	Food Uses: Margarine	Food Uses: Salad & Cooking Oil	Food Uses: Other	Total Food Uses
1981–2	873	—	76	949		227	357		598
1982–3	981	—	55	1,036		217	395		637
1983–4	1,054	—	90	1,144		196	458		693
1984–5	1,195	—	70	1,265		206	511		774
1985–6	1,253	—	75	1,328		200	524		837
1986–7	1,400	—	121	1,520	N.A.	248	491		934
1987–8	1,435	—	109	1,544	N.A.	212	555		946
1988–9[1]	1,415	2	111	1,528	227	218	615		1,060
1989–90[2]	1,459	—	99	1,558	255	224	657		1,062
1990–1[2]	1,500	1	122	1,622					

[1] Preliminary. [2] Forecast. *Source: Economic Research Service, U.S.D.A.*

Non-Food Uses: ts & ss	Non-Food Uses: Other	Non-Food Uses: Total Non-Food Uses	Total Domestic Disappearance	Total Exports & Shipments
			692	202
			723	223
			762	311
			930	260
			863	344
			1,143	268
			1,065	370
			1,073	356
			1,022	414
			1,090	425

T.166

Crude Corn Oil Production in the United States[2] In Millions of Pounds

Crop Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1981–2	81.4	69.2	66.5	56.7	64.9	76.4	71.6	77.1	73.
1982–3	79.2	72.6	78.4	78.9	73.1	88.2	79.8	85.9	83.
1983–4	87.0	85.7	83.2	92.1	87.5	91.1	88.5	94.5	84.
1984–5	88.8	75.5	89.6	87.7	84.2	107.3	107.0	110.1	107.
1985–6	114.2	101.5	97.1	72.8	97.9	102.2	109.8	118.4	106.
1986–7	134.6	120.2	114.0	100.1	102.2	119.3	111.2	123.8	117.
1987–8	121.5	115.9	110.6	107.1	110.2	113.4	117.3	125.6	125.
1988–9	123.8	107.5	127.8	125.5	108.6	128.9	122.0	125.1	119.
1989–90[1]	124.0	97.6	119.1	118.5	113.7	122.6	129.7	109.6	131.
1990–1[1]	142.0	129.4	129.3						

[1] Preliminary. [2] Not seasonally adjusted. *Source: Economic Research Service, U.S.D.A.*

July	Aug.	Sept.	Total
76.5	79.3	78.0	871.5
82.7	92.0	88.2	982.6
90.6	86.4	82.0	1,053
130.1	101.9	104.0	1,194
108.6	119.9	104.1	1,253
123.0	114.7	119.5	1,400
131.7	132.1	124.5	1,435
118.6	98.7	108.5	1,415
140.1	134.7	132.2	1,470

T.167

U.S. Corn Oil Consumption in Refining In Millions of Pounds

Crop Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1983–4	82.4	82.4	81.6	72.6	66.2	91.8	75.1	85.9	7
1984–5	82.1	86.7	91.0	84.0	71.8	89.4	75.6	100.0	96
1985–6	100.0	95.8	87.1	94.1	87.8	100.9	95.1	103.9	94
1986–7	101.2	98.9	98.3	95.7	98.4	104.0	98.7	83.1	92
1987–8	99.2	90.5	78.3	77.7	93.4	90.0	91.7	103.6	109
1988–9	100.3	101.2	107.0	116.5	98.6	113.0	99.5	110.1	101
1989–90[1]	119.3	99.2	105.2	109.1	94.3	96.3	99.8	102.2	102
1990–1[1]	115.3	100.0	108.2						

[1] Preliminary. *Source: Bureau of the Census*

July	Aug.	Sept.	Total
85.1	93.0	86.5	1,053
109.1	96.2	90.8	1,080
105.2	97.4	98.1	1,162
82.6	77.1	92.3	1,111
100.6	119.0	110.6	1,159
100.1	107.5	98.0	1,254
118.3	107.6	102.2	1,260

T.167A

Corn Oil Spot Price, Crude, Wet Mill at Chicago In Cents Per Pound

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1981–2	20.0	21.0	25.0	24.0	20.0	25.0	25.0	24.0	23
1982–3	23.0	23.3	24.0	22.5	24.5	21.5	21.0	22.5	22
1983–4	27.5	28.0	25.8	27.0	25.3	26.5	30.0	30.8	35
1984–5	30.5	34.2	30.7	28.7	30.0	31.0	32.5	31.5	30
1985–6	20.9[2]	20.2	20.1	20.3	18.7	17.1	17.9	18.0	17
1986–7	19.60	20.47	21.48	22.46	24.61	22.66	20.94	21.42	22
1987–8	20.68	20.69	21.49	23.09	22.46	21.26	20.44	21.61	20
1988–9	23.36	21.70	21.22	20.66	20.40	21.61	21.40	21.76	23
1989–90[1]	20.34	22.67	23.00	22.61	23.57	24.96	26.06	24.99	24
1990–1[1]	26.61	24.24							6

[1] Preliminary. [2] Prior to Oct. 1985 prices are for F.O.B. Decatur (tank cars). *Source: Economic Research Service, U.S.D.A.*

July	Aug.	Sept.	Average
23.0	20.5	21.0	23.4
20.0	25.0	36.0	23.8
26.0	23.8	29.0	26.6
N.A.	N.A.	N.A.	31.1
17.0	16.7	16.7	17.0
21.48	20.00	19.14	21.4
29.56	26.58	24.94	23.27
20.05	19.21	19.39	21.01
25.09	28.49	28.00	24.74

T.168

Cotton

World cotton production in 1990/91 was expected to expand by almost 8 percent to 86.1 million bales. The U.S. crop was much larger, and there were increases in China, Pakistan, Australia, and Brazil. China's crop of 19.3 million bales was 11 percent higher, and Pakistan's offtake was placed at 7 million bales, 5 percent more. The USSR was due to harvest 12 million bales, down from 12.3 million in 1989/90.

Mill consumption worldwide was put at 86.8 million bales, slightly below the previous season. China's textile mills were expected to consume 20.3 million bales, down from 20.5 million. Consumption in the USSR was forecast at 9 million bales, below 9.2 million the previous season, as the Soviets faced the choice of providing cotton for domestic use or exporting it for needed foreign exchange. In Pakistan, demand was likely to rise by 11 percent to 5.5 million bales, reducing its exports.

Global exports were placed at 24.1 million bales, up slightly. The U.S. was slated to ship 8 million bales, the USSR was likely to export 2.5 million, and China, while a net importer, was due to export nearly 1 million. Major importers included Japan, China, South Korea, and Taiwan. Japan was likely to buy 3 million bales and China 2 million. Heavy buying by China in late 1990 boosted world prices.

World carry-in stocks of cotton in 1990/91 were 23.8 million bales, down sharply from the previous season's 30.2 million. Carryout stocks were likely to be 22.7 million bales, with most of that held by China, the U.S., and the USSR.

The 1990 U.S. cotton crop increased by 28 percent to 15.6 million bales. Planted acreage was 16 percent more. The growing season was excellent, though there were concerns about an early bout of dryness in Texas. National average yield was 641 pounds per acre, above 614 in 1989. Mississippi's crop of 1.85 million bales was up 19 percent, while Louisiana's harvest of 1.2 million was nearly 40 percent larger. Drought threatened the Texas crop in early summer, but timely rains arrived, and the harvest was 5 million bales, 74 percent more than in 1989. The California crop was 2.8 million bales.

Domestic carry-in stocks in 1990/91 were tight at 3 million bales, a result of the previous season's strong exports and domestic mill consumption. Total supplies were forecast to be 18.6 million bales, down 5 percent. Mill demand for cotton was expected to remain firm at 8.4 million bales. Consumers continued to prefer cotton clothing, particularly cotton knits and denim. Pure cotton fabric was one of the best-selling mill items. Because of higher petroleum prices, cotton was more competitive with man-made fibers like polyester. However, the soft U.S. economy indicated that demand for cotton goods was likely to slow. Use of cotton for industrial purposes weakened in late 1990.

U.S. cotton exports were forecast to rise to a huge 8 million bales from 7.7 million a year earlier. China was a very active buyer of U.S. cotton in late 1990. The steep decline in the value of the dollar helped keep exports competitive. U.S. ending stocks, expected to tighten further, were projected at 2.3 million bales, the lowest in many decades. Tight stocks were the chief factor in the bull market for cotton in 1990.

U.S. Government Program

The 1990 Farm Bill made several changes in the 1991-95 cotton program. The marketing loan program is to remain in effect. Target prices for 1991-95 will be a minimum of 72.9 cents per pound. Producers will have more flexibility to plant acreage on the basis of relative prices and crop profitability. Producers may plant up to 25 percent of their cotton base acreage to another crop without losing base acreage. Cotton may also be planted on the acreage for other crops.

Futures Market

Cotton futures and options are traded on the New York Cotton Exchange (NYCE).

Supply and Distribution of All Cotton in the United States In Thousands of (480-Lb. Net Weight) Bales

Crop Year Beginning Aug.1	Area			Supply				Disappearance							
	Planted	Harvested	Yield	Beginning stocks[1]	Production[2]	Imports	Total	Mill use	Exports	Total	Unaccounted	Ending stocks	Farm price[3]	World "A" Index Price[6]	Value of Production
	–1,000 acres–		Lbs./acre				1,000 480-lb. bales						cents per lb.		Million $
1983	7,926	7,348	508	7,937	7,771	12	15,721	5,928	6,786	12,714	–232	2,775	66.4	87.61	2,448
1984	11,145	10,379	600	2,775	12,982	24	15,781	5,540	6,215	11,755	76	4,102	57.8	69.18	3,671
1985	10,685	10,229	630	4,102	13,432	33	17,567	6,399	1,960	8,359	140	9,348	56.3	48.90	3,628
1986	10,045	8,468	552	9,348	9,731	3	19,082	7,452	6,684	14,136	80	5,026	52.4	61.98	2,449
1987	10,397	10,030	706	5,026	14,760	2	19,788	7,617	6,582	14,199	182	5,771	64.3	72.65	4,555
1988	12,515	11,948	619	5,771	15,411	5	21,187	7,782	6,148	13,930	–165	7,092	56.6	66.42	4,102
1989[4]	10,587	9,538	614	7,092	12,196	2	19,290	8,759	7,694	16,453	163	3,000	65.6	82.34	
1990[5]	12,429	11,708	640	3,000	15,617	20	17,925	8,400	7,000	15,400	75	2,600			

[1] Excludes preseason ginnings. [2] Includes preseason ginnings. [3] Includes allowance for unredeemed loans. [4] Preliminary. [5] Projected [6] Average of 5 cheapest types of SLM 1 3/32" staple length cotton offered on the European market. *Source: Economic Research Service U.S.D.A.*

COTTON

Cotton World Supply and Demand In Thousands of 480-lb. Bales

Yr. Begin. Aug. 1	Beginning Stocks				Production				Consumption				Exports			
	US	USSR	PR China	World Total	US	USSR	PR China	World Total	US	USSR	PR China	World Total	US	USSR	PR China	World Total
1978–9	5,347	2,465	2,500	26,158	10,856	11,907	9,950	59,639	6,352	9,075	13,100	63,286	6,180	3,756	15	19,790
1979–0	3,958	1,895	1,460	21,735	14,629	12,833	10,100	65,736	6,506	9,100	14,100	66,155	9,229	3,770	12	23,244
1980–1	3,000	2,154	1,548	21,177	11,122	13,498	12,400	64,996	5,891	9,150	15,100	65,969	5,926	4,070	6	19,713
1981–2	2,668	2,585	2,392	20,455	15,646	13,277	13,600	71,195	5,264	9,150	16,200	66,131	6,567	4,295	0	20,239
1982–3	6,632	2,527	1,892	25,181	11,963	11,939	16,500	68,080	5,513	9,200	16,400	68,249	5,207	3,890	75	19,452
1983–4	7,937	1,900	3,101	25,198	7,771	9,976	21,300	65,557	5,928	8,750	16,000	68,307	6,786	3,202	760	19,166
1984–5	2,775	707	8,305	23,952	12,982	11,928	28,701	88,960	5,540	9,000	16,000	70,155	6,215	2,994	944	20,206
1985–6	4,102	1,460	20,146	43,246	13,432	12,777	19,000	80,759	6,399	9,400	19,500	77,314	1,960	3,170	2,799	20,299
1986–7	9,348	2,260	16,848	47,026	9,731	12,157	16,300	70,934	7,452	9,350	20,200	82,840	6,684	3,462	3,169	26,013
1987–8	5,026	2,031	9,795	34,661	14,760	11,345	19,500	81,244	7,617	9,000	20,500	84,500	6,582	3,457	2,322	23,327
1988–9[1]	5,771	1,302	6,559	31,436	15,411	12,686	19,100	84,663	7,782	8,900	20,500	85,599	6,148	3,422	1,636	25,849
1989–0[1]	7,092	2,045	4,971	30,157	12,196	12,337	17,400	79,894	8,759	9,200	20,500	86,994	7,694	3,500	863	24,241
1990–1[2]	3,000	2,032	2,882	23,603	15,399	12,400	19,300	87,173	8,400	9,000	20,300	86,330	7,500	3,000	900	24,641

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.168a

World Production of Cotton (All Types) In Thousands of Bales (480-Lb. Bales)

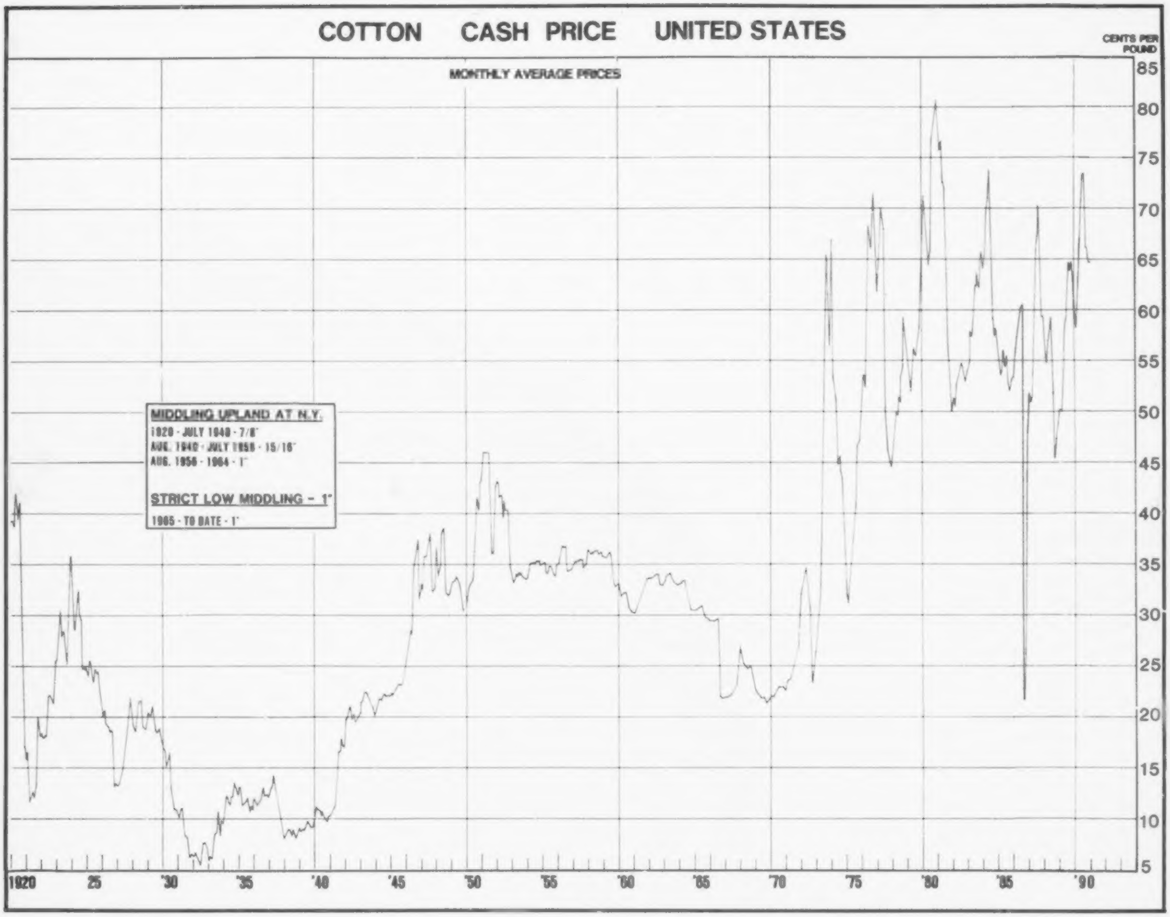
Year Begin. Aug. 1	Argentina	Brazil	PR. China	Egypt	India	Iran	Mexico	Pakistan	Israel	Sudan	Colombia	Turkey	United States	USSR	World Total
1977–8	1,011	2,237	9,411	1,832	5,548	817	1,620	2,643	294	911	639	2,639	14,389	12,154	63,515
1978–9	797	2,623	9,958	2,014	6,191	612	1,563	2,176	363	637	371	2,191	10,856	11,694	59,446
1979–0	667	2,650	10,137	2,221	6,260	455	1,509	3,344	346	523	574	2,191	14,629	12,070	64,642
1980–1	384	2,862	12,429	2,428	6,256	262	1,620	3,281	359	446	527	2,297	11,122	12,224	63,741
1981–2	696	2,941	13,632	2,293	6,559	356	1,440	3,435	423	712	404	2,242	15,641	11,267	68,892
1982–3	515	2,976	16,526	2,115	6,755	431	840	3,783	400	944	151	2,246	11,963	10,380	66,472
1983–4	826	3,423	21,298	1,879	6,122	420	1,038	2,271	427	1,021	352	2,398	7,771	9,976	66,546
1984–5	787	4,431	28,720	1,833	8,360	512	1,110	4,630	402	933	575	2,664	12,982	11,928	88,378
1985–6	551	3,644	19,046	1,999	9,021	485	1,010	5,586	455	651	520	2,379	13,432	12,778	79,881
1986–7	459	2,909	16,261	1,850	7,254	533	638	6,059	308	748	490	2,376	9,731	12,217	70,286
1987–8	1,295	3,968	19,500	1,615	7,140	489	1,025	6,741	269	622	614	2,465	14,760	11,331	81,240
1988–9[1]	894	3,257	19,056	1,426	8,276	551	1,417	6,547	288	652	554	2,985	15,412	12,704	84,424
1989–90[1]	1,240	3,106	17,409	1,367	10,307	565	769	6,684	211	575	480	2,835	12,196	12,219	79,828
1990–1[2]	1,347	3,397	20,307	1,551	10,150	660	922	6,931	208	436	558	2,886	14,864	12,000	87,232

[1] Preliminary. [2] Estimate. *Source: International Cotton Advisory Committee* T.169

World Consumption[3] of All Cottons in Specified Countries In Thousands of Bales (480 Pounds Net[2])

Yr. Beg. Aug. 1	Argentina	Brazil	PR. China	Egypt	Poland	France	W. Germany	India	Italy	Japan	Mexico	Pakistan	Un. Kingdom	United States	USSR	World Total
1977–8	478	2,241	12,050	1,295	697	846	807	5,288	837	2,988	737	1,872	413	6,509	8,550	60,435
1978–9	503	2,440	13,228	1,319	727	822	777	5,715	975	3,371	757	1,975	447	6,352	8,530	63,210
1979–0	468	2,589	13,972	1,295	782	846	789	5,944	1,047	3,408	757	1,898	400	6,506	8,510	65,116
1980–1	382	2,601	15,024	1,477	735	747	792	6,258	958	3,286	759	2,119	220	5,891	8,250	65,281
1981–2	359	2,631	16,285	1,341	606	743	795	5,837	1,028	3,383	708	2,334	207	5,264	7,855	64,666
1982–3	468	2,603	16,822	1,233	610	765	928	6,283	1,052	3,291	630	2,426	207	5,513	7,600	66,412
1983–4	515	2,553	15,617	1,265	619	745	989	6,580	1,140	3,277	528	2,311	207	5,926	7,900	67,339
1984–5	464	2,753	16,168	1,365	621	728	1,000	7,118	1,212	3,181	556	2,503	201	5,540	8,630	69,580
1985–6	540	3,180	18,717	1,449	662	704	980	7,101	1,185	3,098	634	2,449	217	6,399	9,200	75,749
1986–7	600	3,485	20,977	1,387	710	722	1,117	7,865	1,419	3,430	550	3,211	229	7,452	9,400	83,916
1987–8	573	3,727	19,956	1,404	749	698	1,055	7,817	1,511	3,430	683	3,566	219	7,617	9,000	83,561
1988–9[1]	611	3,775	20,503	1,323	775	648	930	8,091	1,424	3,485	778	4,042	188	7,782	9,200	85,326
1989–90[1]	452	3,560	20,158	1,280	659	574	946	8,550	1,447	3,220	751	4,763	160	8,600	9,200	86,250
1990–1[4]	550	3,560	20,500	1,228	593	534	984	9,057	1,447	3,156	766	5,239	149	8,000	9,200	86,924

[1] Preliminary. [2] Except for the U.S. which are in running bales. [3] Includes estimates for hand spinning in some countries. Excludes cotton burned or otherwise destroyed. [4] Estimate. *Source: International Cotton Advisory Committee* T.173



Average Spot Cotton Prices,[2] C.I.F. Northern Europe In Cents Per Pound (Equivalent U.S. ¢/Lb.)

Crop Year (Aug.-July)	M&SM 1"–1 3/32"														
	Argentine "C" 1 1/16"	Australian M-1 3/32	Central Amer.[3] M 1 3/32"	Chinese	Egypt Giza /69/75/81 FG	Greece M 1 3/32"	Mexico M 1 3/32"	Pakistan N.T.[6] Sind SG	Peru Tanguis #3	Tanzania A.R. MWANZA[5]	Turkey Izmir (12 MIR)	SM 1 1/8" U.S. Calif. ACALA	U.S. Memphis M 1 3/32"	U.S. Orleans/ Texas	USSR[4] Vtoroi
1978–79			75.23			83.09	75.99		97.79		73.46	82.96	76.25	67.22	77.92
1979–80			83.63		136.37	84.00	85.86	75.41	101.14	92.33	90.25	90.69	87.49	75.36	85.89
1980–81	83.18		93.47		137.66	100.53	94.91	84.94	104.15	103.25	96.65	101.85	101.23	89.14	92.80
1981–82	63.75		72.87		115.73	81.00	75.28	65.65	83.42	88.08	77.55	79.79	76.30	66.76	73.02
1982–83	41.58		76.14		110.07	85.74	76.39	65.59	82.58	87.50	83.44	84.94	77.94	68.11	70.68
1983–84	83.27	90.83	86.81		134.07	94.37	87.42	75.20	102.50	95.14	92.74	94.90	87.09	78.41	91.15
1984–85	60.96	67.79	66.96	62.50	134.01	74.36	70.14	56.22	82.64	78.36	74.58	76.20	73.69	65.95	—
1985–86	48.34	50.15	51.38	49.88	111.40	50.98	52.94	37.35	74.26	55.81	54.13	59.43	58.28	52.26	47.63
1986–87	68.82	67.05	63.09	62.40	112.59	63.53	64.86	55.48	85.43	67.41	64.87	74.27	62.17	56.38	62.85
1987–88	61.93	75.99	72.93	77.31	145.11	83.85	75.18	66.47	117.18	87.96	86.21	81.17	76.29	72.07	76.18
1988–89[1]	63.87	71.94	60.76	69.11	176.85	62.93	61.64	57.17	75.84	69.05	66.77	77.09	68.94	63.14	66.18
1989–90[1]	76.74	84.37	80.78	85.81	189.54	83.73	82.59	77.10	84.31	86.80	90.45	88.67	83.84	79.01	82.07
May '90	79.70	87.60		84.00	191.50	85.80		80.35			93.00	94.20	88.90	83.90	
June '90	83.25	89.88			191.50	88.00		81.88				96.94	92.69	85.75	
July '90	85.25	88.56			191.75	87.94		83.25				96.25	95.88	85.94	

[1] Preliminary. [2] Generally for prompt shipment. [3] Cent. Amer. 1986–7 to date. Prior data for Guatemala SM 1 1/16". [4] Prior to 11/81 PERVY-SM 1/16". [5] No. ½ until 2/86; No. 3 since. [6] Afzal since 1/86. *Source: International Cotton Advisory Committee* T.172

COTTON

Average Price of Strict Low Middling, 1¹⁄₁₆″, Cotton at Designated U.S. Markets ¢/Lb. (Net Weight)

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
1981–2	66.44	60.81	60.63	57.47	55.11	57.82	57.26	59.73	62.03	62.44	61.10	64.96	60.48
1982–3	60.38	58.98	58.58	58.20	59.65	60.16	61.72	66.05	65.33	66.88	70.74	70.27	63.08
1983–4	72.93	71.68	72.01	73.41	73.04	70.55	71.38	74.89	75.64	79.44	75.00	67.35	73.11
1984–5	63.01	61.16	61.15	60.43	60.45	59.96	58.65	60.18	61.71	60.11	59.76	59.55	60.51
1985–6	57.87	56.38	56.14	56.03	56.25	58.39	59.81	61.75	62.62	63.95	65.24	65.73	60.01
1986–7	26.81	33.56	43.95	45.74	54.19	57.17	54.75	54.60	57.72	65.94	70.42	73.07	53.16
1987–8	75.89	71.41	64.30	64.66	62.26	59.69	57.83	59.64	60.07	61.55	62.86	57.40	63.13
1988–9	55.20	51.25	52.20	53.40	54.80	55.67	55.37	57.59	61.43	63.70	64.06	67.39	57.67
1989–90	69.88	68.46	69.40	68.33	63.56	62.21	64.95	68.06	71.31	74.61	77.06	79.53	69.78
1990–1	76.27	71.01	70.54	69.48	69.92	70.50							

Note: Grade 41. *Source: Department of Agriculture* T.190

Average Spot Cotton, 1³⁄₃₂″, Price (SLM) at Designated U.S. Markets In Cents Per Pound (Net Weight)

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average	1¹⁄₃₂″	1″
1981–2	66.84	61.22	61.08	57.91	55.52	58.24	57.70	60.12	62.41	62.82	61.48	N.A.	60.89	58.28	54.13
1982–3	60.76	59.36	58.97	58.57	60.02	60.53	62.09	66.43	65.72	67.31	71.20	70.73	63.47	61.17	56.41
1983–4	70.52	69.29	69.49	70.82	70.44	68.03	68.98	72.56	73.37	77.18	72.74	65.11	73.55	70.71	66.32
1984–5	63.45	61.60	60.71	59.99	60.01	59.52	58.21	59.74	61.27	59.67	59.32	59.99	60.29	58.30	55.98
1985–6	57.40	55.89	55.66	55.55	55.77	57.92	59.34	61.28	62.15	63.48	64.77	66.20	59.62	57.87	55.81
1986–7	27.39	35.56	44.53	46.27	54.71	57.70	55.26	55.12	58.24	66.46	70.94	73.59	53.81	50.78	47.77
1987–8	76.42	71.99	64.84	65.17	62.76	60.14	58.28	60.12	60.55	62.03	63.34	57.88	63.63	60.81	59.33
1988–9	55.69	51.80	52.66	53.80	55.20	56.07	55.77	58.04	61.94	64.21	64.57	67.92	58.14	53.99	52.32
1989–90	70.42	69.00	69.89	68.75	63.99	62.63	65.37	68.48	71.73	75.03	77.48	79.95	70.23	66.02	64.89
1990–1	76.69	71.43	70.97												

Source: Agricultural Marketing Service, U.S.D.A. T.191

Average Spot Prices of U.S. Cotton,[1] Base Quality—(SLM) at Designated Markets In Cents Per Pound

Yr. Begin Aug. 1	Atlanta	Augusta	Charleston	Dallas (East Tex.-Okl.)	Fresno (San Joaquin Valley)	Galveston	Greenville (Southeast)	Greenwood (South Delta)	Houston	Little Rock	Lubbock (West Texas)	Memphis (North Delta)	Montgomery (Southeast)	Phoenix (Desert So. West)	Average
1980–1	—	85.21	—	80.65	82.80	—	84.54	84.30	—	—	79.66	83.81	84.28	81.70	82.99
1981–2	—	61.87	—	58.32	61.02	—	61.57	61.34	—	—	57.96	61.00	61.34	59.93	60.48
1982–3	—	—	—	61.62	64.49	—	63.50	63.35	—	—	60.84	63.33	63.50	63.17	63.08
1983–4	—	—	—	70.79	77.02	—	73.28	73.14	—	—	70.35	73.25	72.93	74.13	73.11
1984–5	—	—	—	58.94	61.29	—	61.08	60.98	—	—	58.93	60.73	60.56	61.57	60.51
1985–6	—	—	—	58.96	60.35	—	60.52	60.69	—	—	59.17	60.40	60.17	59.84	60.01
1986–7	—	—	—	51.03	60.97	—	51.66	51.99	—	—	51.20	51.70	51.34	55.38	53.16
1987–8	—	—	—	61.14	66.02	—	63.37	62.41	—	—	61.09	62.54	62.79	65.69	63.13
1988–9	—	—	—	55.88	63.30	—	57.26	56.67	—	—	55.77	56.71	57.26	59.67	57.90
1988–9	—	—	—	55.88	63.30	—	57.26	56.67	—	—	55.77	56.71	57.26	59.67	57.90
1989–90	—	—	—	67.11	73.47	—	70.64	69.50	—	—	67.06	69.51	70.64	71.19	69.78

[1] Mixed Lots. Net Weight, uncompressed in warehouse. *Source: Agricultural Marketing Service, U.S.D.A.* T.177

Avg. Price[1] Received by Farmers for Upland Cotton in the U.S. In Cents Per Pound

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average[1]
1980–1	73.7	73.9	75.3	77.6	80.9	76.6	70.8	71.9	72.7	72.5	71.2	70.4	74.4
1981–2	65.0	58.1	63.2	61.1	51.5	50.3	49.1	50.4	54.3	55.8	58.1	59.9	54.0
1982–3	52.7	56.0	60.9	61.0	57.7	57.0	57.7	62.2	60.4	63.6	62.6	67.1	59.5
1983–4	64.6	62.8	63.1	67.0	66.2	62.7	65.0	70.1	67.2	72.7	68.0	65.9	65.3
1984–5	67.3	65.6	64.4	62.0	56.1	52.2	49.5	56.1	57.0	57.5	60.3	60.5	58.7
1985–6	56.6	55.9	57.3	56.5	53.7	54.0	56.9	58.1	59.2	58.5	58.5	61.5	56.8
1986–7	46.8	48.6	50.0	52.6	52.7	52.1	46.4	47.5	50.4	60.0	66.2	68.3	51.5
1987–8	63.8	65.4	65.1	65.6	64.6	61.7	57.0	57.9	59.9	58.3	62.0	59.5	63.7
1988–9	53.5	51.9	55.1	57.5	55.3	54.7	52.8	55.6	58.7	58.3	57.2	59.5	55.6
1989–90[2]	60.4	63.8	65.8	65.6	61.9	60.2	61.0	63.8	65.8	66.2	64.0	63.9	63.6
1990–1[2]	64.6	65.0	67.5	68.2	65.9	63.9							

[1] Weighted average by sales. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.187

Purchases Reported by Exchanges in Designated U.S. Spot Markets In Running Bales

Yr. Begin August 1	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
1985	166,725	152,795	258,891	395,097	570,460	671,758	389,436	416,654	487,813	626,319	968,185	690,947	5,795,080
1986	585,628	638,356	392,451	422,542	1,353,241	1,055,081	633,852	354,643	501,265	354,008	163,307	160,474	6,614,848
1987	152,935	252,669	650,349	718,829	1,065,457	622,727	571,851	463,739	266,545	572,702	336,191	117,645	5,791,639
1988	288,187	166,692	230,724	163,642	323,025	383,699	811,630	388,169	307,937	282,564	261,958	282,288	3,890,515
1989	119,516	49,237	89,853	214,910	258,849	388,519	333,417	206,528	157,187	88,966	42,299	46,312	1,993,593
1990	36,735	53,948	154,499	376,790	600,752								

[1] Purchases are for 10 markets; commencing February 1980 purchases are for nine markets; and commencing March 28, 1983 purchases are for eight markets. *Source: Agricultural Marketing Service: U.S.D.A.* T.190a

Average Open Interest of Cotton Futures at New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1984	30,911	30,735	30,578	31,624	30,195	25,534	21,949	21,954	21,042	21,885	21,800	17,969
1985	18,347	18,741	18,216	15,915	15,048	15,986	17,439	20,003	21,220	22,049	23,489	22,354
1986	23,451	21,654	20,686	20,088	22,473	23,566	22,399	26,058	26,379	24,277	22,056	22,320
1987	25,196	25,048	22,482	23,760	26,074	27,996	32,012	37,426	39,204	39,912	38,017	33,888
1988	35,240	35,974	30,507	29,933	29,753	31,804	28,307	34,637	38,453	37,162	33,210	30,682
1989	31,415	30,978	36,725	36,657	40,761	38,693	40,059	45,894	49,629	49,072	48,136	42,349
1990	40,237	36,291	36,073	37,829	37,908	38,556	36,083	34,042	35,250	40,431	43,997	40,241

Source: N.Y. Cotton Exchange T.182

Volume of Trading of Cotton Futures at New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	124,735	133,891	127,448	126,780	139,988	111,050	71,522	51,941	39,519	83,631	86,729	39,907	1,137,141
1985	61,860	57,034	61,921	65,709	47,606	47,604	41,069	40,524	42,747	55,046	63,829	51,543	636,492
1986	73,576	77,152	57,433	74,520	57,479	64,742	75,545	94,025	130,989	111,359	113,812	84,618	1,015,392
1987	110,165	106,520	88,621	106,620	110,303	132,180	98,339	127,048	131,214	124,319	126,582	107,124	1,395,980
1988	114,672	119,832	97,533	118,614	127,880	149,303	89,907	100,447	108,285	135,221	124,221	84,334	1,370,249
1989	124,764	135,963	113,028	118,573	135,044	167,442	91,381	151,034	165,255	143,713	178,889	124,034	1,649,120
1990	135,260	116,806	126,820	121,203	139,489	135,040	132,329	129,081	103,936	142,670	150,958	98,895	1,534,611

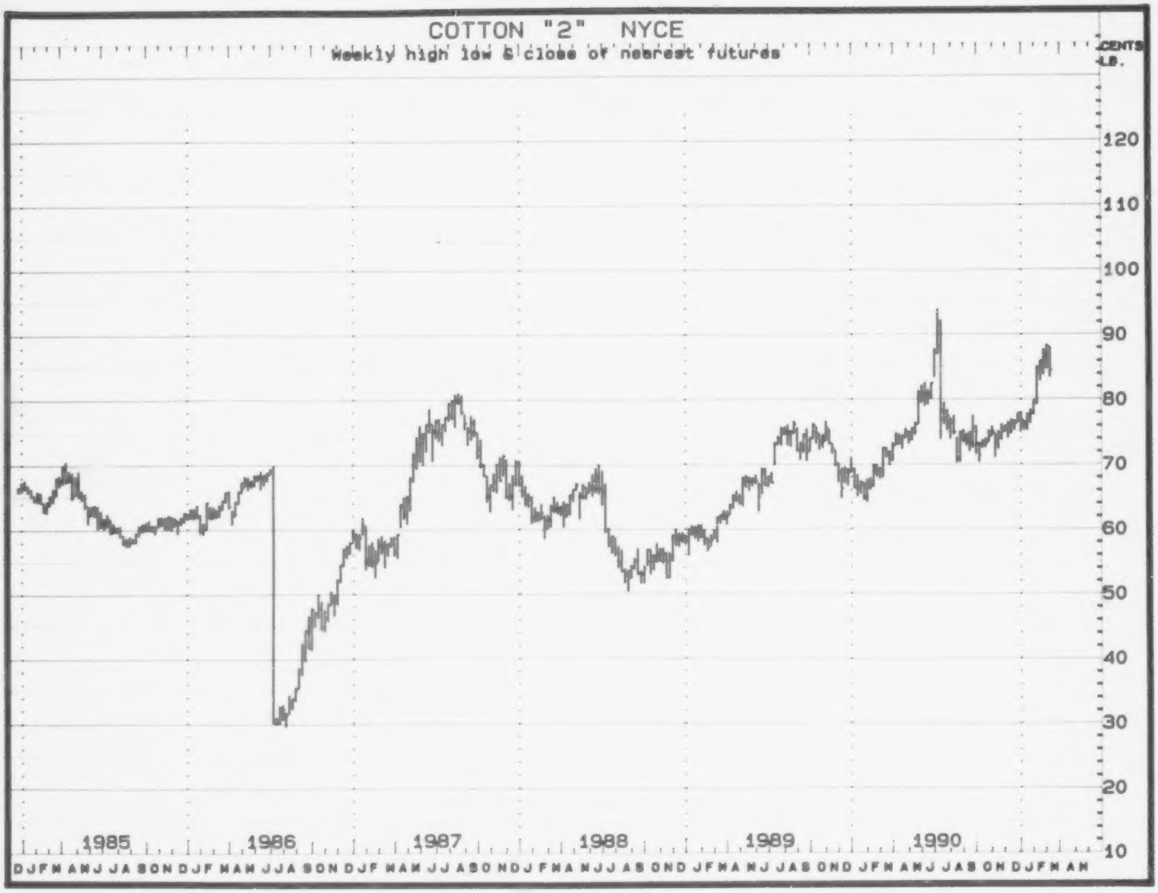
Source: N.Y. Cotton Exchange T.183

High, Low & Closing Prices of May Cotton Futures at New York In Cents per Pound

Year of Delivery		Year Prior to Delivery										Delivery Year					Life of Delivery Range
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1985	High	81.85	78.00	79.25	79.15	75.25	71.80	69.00	72.05	71.30	67.66	68.20	66.85	68.25	70.45	68.98	79.25
	Low	77.70	75.80	77.45	75.00	69.60	68.74	67.60	67.36	66.45	66.20	65.70	63.28	63.26	64.75	66.10	63.26
	Close	81.74	78.00	78.60	75.00	69.75	69.15	68.00	69.85	66.95	66.95	65.76	64.18	67.60	66.40	66.33	—
1986	High	67.55	67.88	66.65	64.25	62.90	61.10	60.90	62.39	63.45	62.10	63.60	64.48	65.85	67.25	68.05	70.55
	Low	66.35	66.52	61.86	62.00	59.95	59.30	59.25	60.45	60.50	59.60	58.80	59.50	61.90	60.70	66.00	58.80
	Close	67.55	66.52	63.13	63.00	60.25	60.05	60.48	67.34	60.75	62.06	60.32	63.45	65.69	66.80	67.20	—
1987	High	46.70	41.85	40.55	37.30	35.25	38.40	48.90	50.90	52.96	59.50	60.15	57.00	58.70	64.85	66.10	66.10
	Low	40.50	38.30	36.70	33.60	31.56	32.40	35.44	45.51	46.35	52.60	53.30	52.10	54.00	55.55	62.85	31.56
	Close	41.00	40.70	36.73	33.93	34.40	38.40	47.50	47.00	52.96	59.25	54.30	54.60	57.05	64.45	65.61	—
1988	High	56.80	65.23	74.60	74.25	78.35	81.70	78.85	74.60	73.00	71.20	68.90	64.50	64.90	66.05	67.00	81.70
	Low	52.62	55.90	64.00	68.50	71.75	76.20	72.65	65.00	67.81	63.90	61.60	59.20	60.71	60.25	66.00	50.50
	Close	56.22	65.23	71.30	72.50	78.05	78.50	74.05	68.75	70.05	67.65	62.41	61.28	62.88	66.05	66.73	—
1989	High	59.90	58.75	63.60	68.70	62.90	56.80	56.18	57.80	57.20	59.79	60.70	60.85	62.75	65.75	68.20	68.70
	Low	57.55	55.35	57.00	60.70	55.70	49.03	50.10	51.75	53.22	55.70	56.01	57.30	59.70	62.20	63.50	49.03
	Close	58.80	56.90	61.75	60.88	56.15	51.72	51.42	56.00	56.70	58.45	60.20	60.54	61.97	64.00	67.71	—
1990	High	65.40	66.52	70.50	72.70	77.45	78.30	76.85	77.50	78.85	72.38	69.75	71.30	73.25	75.85	75.00	78.85
	Low	61.38	64.25	65.90	65.30	71.60	74.95	73.10	74.70	70.75	66.75	65.65	67.58	69.35	72.32	73.20	55.25
	Close	65.27	65.92	70.11	72.00	76.75	76.10	75.10	77.36	71.88	69.49	68.18	70.16	72.70	73.73	74.42	—
1991	High	67.57	68.05	70.50	75.30	77.40	74.80	75.23	75.65	75.25	76.30						
	Low	65.50	66.12	68.00	70.32	72.13	70.61	72.42	72.85	72.15	73.80						
	Close	66.45	68.05	70.23	75.26	73.77	74.00	73.40	75.13	73.88	76.50						

Source: N.Y. Cotton Exchange T.184

COTTON



United States Government Crop Forecasts and Actual Cotton Crops

Year	Forecasts of Production (1,000 Bales of 480 Lbs.[1]) Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1	Jan. 1	Actual Crop	Forecasts of Yields (In Lbs. Per Harv. Acre) Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1	Jan. 1	Actual Yield
1976	10,734	10,375	10,251	9,891	10,264		10,581	466	451	445	435	451		465
1977	13,535	13,302	13,317	13,832	14,496		14,389	506	495	500	503	525		520
1978	11,820	11,155	10,873	10,981	10,841		10,856	462	425	429	418	421		420
1979	13,710	14,245	14,356	14,544	14,527		14,629	497	525	528	535	534		547
1980	12,812	11,689	11,589	11,224	11,125		11,122	461	421	419	408	411		404
1981	14,789	15,507	15,476	15,560	15,733		15,646	515	540	540	543	546		542
1982	11,143	11,029	11,365	11,947	12,102		11,963	563	569	587	605	613		590
1983	7,810	7,776	7,550	7,497	7,725		7,771	503	501	487	504	506		508
1984	12,569	13,276	13,272	13,271	13,292		12,982	583	615	620	613	610		600
1985	13,780	13,655	13,638	13,875	13,810	13,534	13,432	[illegible]38	632	633	644	644	630	630
1986	10,676	10,506	10,006	9,875	9,792	9,785	9,731	[illegible]3	565	539	546	539	553	552
1987	12,907	12,846	13,336	13,936	14,281	14,724	14,760	615	616	640	671	695	703	706
1988	14,934	14,709	14,714	14,837	15,197	15,446	15,411	616	605	605	612	627	623	619
1989	11,834	12,279	11,991	12,102	12,083	12,333	12,196	618	603	607	608	619	619	614
1990	14,864	14,722	14,540	14,905	15,399	15,617		622	616	609	622	640	640	

[1] Net Weight bales. *Source: Crop Reporting Board, U.S.D.A.*

T.175

U.S. Production of Cotton (Upland) & American-Pima In Thous. of 480-Lb. Net Weight Bales

Crop Year	Upland														Total
	Alabama	Arizona	Arkansas	California	Georgia	Louisiana	Mississippi	Missouri	No. Car.	Oklahoma	So. Car.	Tennessee	Texas	New Mexico	Amer. Pima
1978	291	1,068	660	1,940	111	478	1,378	188	45	355	115	235	3,792	101	93.4
1979	324	1,280	606	3,408	152	690	1,437	157	43	522	116	171	5,515	104	98.6
1980	275	1,354	444	3,109	86	460	1,143	177	52	205	77	200	3,320	107	104.2
1981	422	1,556	604	3,535	159	742	1,565	168	95	440	164	315	5,663	141	79.6
1982	460	1,095	534	3,073	235	870	1,760	204	102	238	155	339	2,700	78	98.7
1983	183	725	323	1,971	112	532	900	73	43	145	53	151	2,380	70	94.7
1984	447	1,097	612	2,913	281	1,056	1,650	187	120	183	170	337	3,680	87	130.4
1985	545	928	703	3,114	370	742	1,655	204	117	285	180	419	3,910	71	155.1
1986	330	675	602	2,245	185	673	1,190	196	109	210	87	396	2,535	62	205.9
1987	397	849	901	2,989	338	977	1,745	330	98	346	106	634	4,635	89	284.6
1988	380	865	1,044	2,824	370	948	1,825	306	133	303	140	584	5,215	102	334.2
1989	383	649	851	2,661	342	868	1,555	269	141	173	154	476	2,870	80	691.7
1990[1]	400	820	1,100	2,750	410	1,180	1,850	305	271	380	145	490	5,000	100	362.9

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.176

Gross Entries of Cotton into U.S. Government Loan Program In Thousands of Running Bales (480-Lb.)

Crop Yr.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May[1]	June[1]	July[1]	Total
1978–9	0	5	26	89	215	584	352	189	68	16	14	[2]	1,560
1979–0	0	[2]	23	294	319	600	316	110	51	35	8	[2]	1,759
1980–1	0	[2]	8	253	528	912	343	204	36	28	16	[2]	2,328
1981–2	0	9	132	293	1,081	2,796	1,120	473	117	39	21	2	6,083
1982–3	0	46	143	674	1,857	1,590	4,503	4,160	43	23	13	3	5,062
1983–4	0	0	165	227	253	513	188	264	127	9	32	5	1,765
1984–5	0	1	11	98	563	776	1,057	324	62	44	32	5	2,977
1985–6	31	202	771	1,497	1,406	2,375	781	159	61	12	40	60	7,365
1986–7	22	136	775	1,146	1,124	1,664	662	504	97	40	30	6	6,204
1987–8	[2]	25	400	839	745	1,503	1,305	321	170	44	18	9	5,381
1988–9	10	192	1,131	2,015	2,649	2,400	2,441	354	19	7	8	—	11,238
1989–90	—	21	119	997	765	1,718	130	22	8	1	1	0	3,743
1990–1	0	1	363	575	762	1,302	127						

NOTE: Seasonal totals are net, due to allowances for rejections. [1] Entries after April 30 represent late reporting. [2] Less than one thousand bales. *Sources: N.Y. Cotton Exchange; Commodity Credit Corporation* T.178

U.S. Daily Rate of Upland Cotton Mill Consumption[2] on Cotton-System Spinning Spindles In Thousands of 480 Lb. Running Bales

Crop Yr.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
1980–1	22.1	22.8	23.9	22.9	19.0	21.8	22.3	21.5	21.7	22.1	21.3	19.3	21.7
1981–2	21.4	20.7	22.4	20.1	16.0	18.9	19.9	19.7	20.5	19.6	18.4	16.0	19.5
1982–3	19.3	19.0	20.8	19.5	17.0	20.2	21.5	22.0	21.5	22.0	21.7	18.4	20.2
1983–4	22.6	22.4	22.9	22.3	18.7	23.5	22.4	21.9	21.5	22.1	20.1	17.7	21.6
1984–5	21.4	20.4	21.4	19.5	16.9	20.0	20.9	20.8	21.0	21.9	21.0	18.5	20.3
1985–6	22.9	22.5	24.6	23.9	19.5	23.8	24.9	24.6	24.8	25.2	24.4	20.9	23.4
1986–7	26.7	26.2	27.3	26.5	23.1	27.3	28.1	29.4	28.7	29.3	28.3	27.0	27.3
1987–8	30.3	30.1	31.0	30.3	24.4	28.4	29.5	29.5	27.8	27.6	26.5	21.7	28.1
1988–9	28.8	27.7	27.6	26.1	22.9	28.3	29.2	30.0	31.2	32.2	31.9	27.9	28.6
1989–90[1]	33.2	33.1	33.2	30.8	26.1	30.2	31.6	31.8	31.2	32.1	33.0	28.0	31.2
1990–1[1]	34.0	33.4	33.6	30.8									

[1] Preliminary. [2] Not seasonally adjusted. *Source: Bureau of the Census; U.S.D.C.* T.180

COTTON

Consumption of American and Foreign Cotton in the United States In Thousands of Running Bales

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
1980–1	443	456	597	458	475	435	446	539	435	441	531	385	5,641
1981–2	429	517	448	403	400	378	398	493	410	392	460	317	5,038
1982–3	386	474	416	391	425	404	430	549	431	441	543	369	5,259
1983–4	453	560	459	446	468	469	448	548	430	442	503	354	5,628
1984–5	428	509	428	390	423	399	418	519	419	439	525	369	5,268
1985–6	458	562	493	477	486	595	499	492	620	503	489	522	6,198
1986–7	534	523	683	529	576	546	562	734	573	586	708	540	7,096
1987–8	606	753	621	606	610	568	590	738	556	551	662	433	7,294
1988–9	577	693	552	523	572	568	584	751	623	645	798	559	7,444
1989–90[1]	663	829	665	617	653	605	633	794	624	641	826	559	8,109
1990–1	680	835	671	615									

[1] Preliminary. *Source: Bureau of the Census* T.188

Exports of All Cotton[2] from the United States In Thousands of Running Bales

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar	Apr.	May	June	July	Total
1980–1	402	393	237	436	541	669	2,352	733	498	458	320	264	7,303
1981–2	990	261	262	478	737	653	754	873	676	484	498	396	7,062
1982–3	342	351	293	382	377	438	368	487	612	464	831	409	5,354
1983–4	383	322	261	441	632	663	719	896	723	607	422	365	6,434
1984–5	452	264	292	484	629	793	766	625	544	426	353	252	5,880
1985–6	193	187	207	223	187	396	180	176	163	76	55	21	2,064
1986–7[2]	374	496	489	525	664	591	518	750	500	465	554	439	6,366
1987–8	355	304	316	612	536	698	879	649	565	537	486	359	6,297
1988–9	248	173	292	352	524	756	514	597	575	795	515	649	5,987
1989–90	431	384	507	469	516	909	840	882	818	495	510	535	7,295
1990–1[1]	480	355	433	591	639	1,112							

[1] Preliminary. [2] Data prior to Aug. 1986 are for American cotton only. *Source: Foreign Agricultural Service, U.S.D.A.* T.185

U.S. Exports of American Cotton to Countries of Destination In Thousands of 480-Pound Bales

Yr. Beg. Aug. 1	Bangladesh	Canada	Hong Kong	France	W. Germany	Egypt	Italy	Japan	Indonesia	Spain	Sweden	United Kingdom	Rep. of Korea	P.R. China	Taiwan	USSR	World Total
1980–1	33	267	205	42	112		54	1,139		60	10	38	1,303	1,375	351		5,926
1981–2	50	167	243	58	119		106	1,626		57	17	43	1,412	848	777	0	6,567
1982–3	88	238	158	45	163		105	1,286		72	23	50	1,322	20	378	192	5,207
1983–4	135	227	283	154	195	0	252	1,709	320	114	28	67	1,269	12	495	351	6,785
1984–5	60	195	125	132	195	126	301	1,464	258	118	22	72	1,257	6	513	329	6,211
1985–6	14	98	1	8	85	120	91	520	105	29	15	35	513	0	46	0	1,958
1986–7	89	70	324	114	263	68	263	1,330	1,723	60	15	56	46	0	52	0	6,684
1987–8	42	153	88	67	376	93	406	1,569	287	83	19	69	1,450	0	424	98	6,582
1988–9	58	148	108	9	255	102	239	1,381	307	51	16	37	1,302	793	254	2	6,147
1989–90[1]	130	197	244	20	368	242	431	1,594	499	151	22	74	1,365	670	320		7,694

[1] Preliminary. *Source: Bureau of the Census* T.189

Cotton Government Loan Program in the United States

Crop Year Begin Aug. 1	Support Price — ¢ per lb. —	Target Price — ¢ per lb. —	Put under Support ths. bales	% of Production	CCC Acquired — ths. bales —	CCC Owned July 31 — ths. bales —	Crop Year Begin Aug. 1	Support Price — ¢ per lb —	Target — ¢ per lb —	Put under Support ths. bales	% of Production	CCC Acquired — ths. bales —	CCC Owned July 31 — ths. bales —
1982–3	57.08	71.00	5,003	42.2	786	397	1987–8	52.25	79.40	5,362	37.1	105	3
1983–4	55.00	76.00	1,743	22.7	0	158	1988–9	51.80	75.90	11,231	74.4	66	50
1984–5	55.00	81.00	2,957	23.0	649	123	1989–90[1]	50.00	73.40	3,732		1	
1985–6	57.30	81.00	7,289	54.9	161	767	1990–1[1]	50.27	72.90				
1986–7	55.00	81.00	6,170	64.8	12	73	1991–2						

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.*

U.S. Imports of Cotton Cloth (Raw Cotton Equivalent) In Thousands of Bales (Net Weight—480 Lbs.)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	99.2	96.5	102.1	97.9	79.1	98.9	101.7	91.3	80.1	80.6	66.0	59.8	1,053.2
1985	60.5	85.4	86.0	77.3	94.0	81.5	81.2	72.6	91.8	95.5	98.9	100.2	1,024.9
1986	116.4	109.1	128.9	116.6	106.5	104.8	127.1	109.6	100.2	98.8	96.3	107.9	1,322.2
1987	119.9	142.1	136.4	119.6	119.3	140.4	143.3	140.4	130.1	146.6	143.8	135.3	1,617.2
1988[1]	98.7	102.6	107.6	98.6	90.4	87.3	86.0	91.6	87.2	92.9	94.5	109.4	1,146.8

[1] Preliminary. *Source: Bureau of the Census*

U.S. Exports of Cotton Cloth (Raw Cotton Equivalent) In Thousands of Bales (Net Weight—480 Lbs.)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	18.2	18.6	20.4	20.6	24.3	24.8	22.7	15.7	18.4	20.7	18.4	16.4	239.2
1983	20.1	15.1	18.2	17.2	14.2	15.9	12.7	14.0	15.4	16.0	15.3	14.8	188.8
1984	14.2	12.3	13.6	13.4	14.2	16.9	13.5	12.8	15.7	16.7	14.1	13.5	170.9
1985	18.7	15.2	19.8	21.2	17.3	18.6	15.7	21.6	24.7	17.4	15.6	14.7	220.5
1986	17.5	20.1	23.6	23.5	27.4	23.6	17.3	30.1	26.2	26.1	28.2	30.0	293.6
1987	20.2	27.5	25.4	21.7	20.3	22.1	19.0	23.0	19.9	20.6	20.5	19.9	260.0
1988[1]	18.5	18.1	23.9	20.4	19.3	20.4	16.8	19.3	25.0	20.5	22.8	25.4	250.4

[1] Preliminary. *Source: Bureau of the Census* T.193

United States Cotton Ginnings To: In Thousands of Running Bales

Crop Year	Aug. 1	Aug. 16	Sept. 1	Sept. 16	Oct. 1	Oct. 15	Nov. 1	Nov. 15	Dec. 1	Dec. 15	Jan. 1	Jan. 15	Feb. 1	Total Crop
1981–2	44	N.A.	427	645	1,725	3,299	5,541	7,688	10,156	12,023	13,460	14,276	14,778	15,150
1982–3	40	N.A.	453	578	1,529	2,660	5,288	7,202	8,823	9,627	10,574	10,974	11,300	11,526
1983–4	2	N.A.	315	397	763	1,748	3,348	4,638	6,003	6,880	7,209	7,389	7,476	7,504
1984–5	163	N.A.	634	780	1,175	2,277	4,321	7,025	8,972	10,478	11,079	11,682	12,319	12,545
1985–6	70	N.A.	681	1,073	2,431	4,342	6,246	8,216	10,052	11,372	12,365	12,776	12,948	12,988
1986–7	145	N.A.	624	1,022	2,407	3,618	5,292	6,369	7,491	8,263	8,588	9,093	9,270	9,438
1987–8	1	N.A.	429	1,242	3,196	5,359	7,531	9,135	11,082	12,588	13,276	13,737	14,180	14,358
1988—9	136	N.A.	804	1,147	2,279	4,108	6,888	9,449	11,698	13,257	14,248	14,686	14,904	14,985
1989–90[1]	90	N.A.	382	524	981	2,773	5,806	8,389	10,357	11,297	11,558	11,684	11,771	11,774
1990–1[1]	120	N.A.	583	1,091	2,620	4,748	7,959	10,204	12,436	13,871	14,519	14,812	14,968	

[1] Preliminary. *Source: Bureau of Census* T.171

U.S. Fiber Prices In Cents per Pound

	Cotton[1]		Rayon[2]		Polyester[3]		Price Ratios[4] in Percent	
Year	Actual	Raw[5] Equivalent	Actual	Raw[5] Equivalent	Actual	Raw[5] Equivalent	Cotton/Rayon	Cotton/Polyester
1983	78	86	80	84	73	76	1.02	1.13
1984	76	84	84	88	79	82	.95	1.02
1985	66	73	79	82	66	69	.89	1.06
1986	61	68	76	79	62	65	.86	1.04
1987	73	81	81	84	66	69	.96	1.18
1988	65	72	91	94	74	77	.77	.94
1989	72	80	110	114	86	89	.70	.89
1990 Jan.	70	78	119	124	89	93	.63	.84
Feb.	72	80	119	124	89	93	.65	.86
Mar.	76	84	119	124	89	93	.68	.91
Apr.	78	87	119	124	89	93	.70	.94
May	82	91	119	124	85	89	.74	1.03
June	87	97	119	124	82	85	.78	1.13
July	87	96	119	124	78	81	.78	1.19
Aug.	84	93	119	124	78	81	.75	1.14
Sept.	79	88	119	124	78	81	.71	1.08
Oct.	78	87	122	127	78	81	.68	1.07

[1] SLM-1 1/16" at group B Mill points, net weight. [2] 1.5 and 3.0 denier, regular rayon staple. [3] Reported average market price for 1.5 denier polyester staple for cotton blending. [4] Raw fiber equivalent. [5] Actual prices converted to estimated raw fiber equivalent as follows: cotton, divided by 0.90, rayon and polyester, divided by 0.96. *Source: USDA, Agricultural Marketing Service and trade reports.*

COTTON

Average Producer Price Index of Gray Cotton Broadwovens Index 1982 = 100

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1985	103.7	102.7	102.6	102.4	102.0	102.1	101.8	100.6	100.4	101.5	102.0	102.0	102.0
1986	101.6	101.2	100.8	100.7	101.0	101.0	101.2	101.0	101.3	101.2	101.5	101.2	101.1
1987	101.8	101.8	101.9	102.5	103.0	103.3	106.0	103.9	107.1	109.5	110.6	111.5	105.2
1988	112.7	114.3	114.5	115.9	116.2	116.1	115.9	115.6	114.8	111.9	112.5	112.3	114.4
1989	112.4	111.3	110.9	110.9	110.5	110.1	109.4	109.8	109.8	110.8	110.9	113.5	110.9
1990[1]	113.7	113.8	113.8	114.0	114.1	109.9	115.1	115.1	112.4	111.8	115.8	116.2	113.8

[1] Preliminary. *Source: Bureau of Labor Statistics* (0337-01) T.181

Cotton Cloth[1] Production in the United States In Millions of Linear Yards

Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total Year	Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total Year
1982	979	961	868	987	3,794	1987	1,158	1,217	1,219	1,178	4,772
1983	1,068	1,052	1,032	1,040	4,192	1988	1,233	1,208	1,048	1,029	4,632
1984	1,069	1,031	947	955	4,002	1989[2]	1,150	1,192	1,134	1,106	4,589
1985	1,030	1,002	933	955	3,921	1990[2]	1,194	1,122	1,082		
1986	1,037	1,103	1,095	1,129	4,364	1991					

[1] Cotton broadwoven goods over 12 inches in width. [2] Preliminary. *Source: Bureau of the Census* T.192

U.S. American Upland Cotton—Ginnings, by Staple Length In Thousands Running of Bales

Year beginning August	(13/16") 26 & under	(7/8") 28	(29/32") 29	(15/16") 30	(31/32") 31	(1") 32	(1 1/32") 33	(1 1/16") 34	(1 3/32") 35	(1 1/8") 36	37 & Over	All staple lengths
1983	3	22	65	251	482	471	513	1,012	2,531		2,063	7,413
1984	7	45	122	414	761	719	715	1,149	2,858		5,630	12,419
1985	—	5	38	234	825	889	883	1,679	4,182	2,380	1,721	12,837
1986	—	2	13	58	226	491	1,058	1,859	3,184	2,159	186	9,237
1987	1	4	18	71	277	698	1,505	2,643	5,119	——3,748——		14,083
1988[1]	2	16	78	303	929	1,394	1,438	1,567	3,579	——5,148——		14,462

[1] Preliminary. *Source: Agricultural Marketing Service, U.S.D.A.* T.179

Raw Cotton Equivalent of U.S. Textile Imports In Thousands of Pounds

	Yarn, Thread, and Woven Fabric				Primarily Manufactured Products									
		Woven Fabric												
Year	Yarn	100 percent cotton	Blends	Total All	Pile fabrics and mfrs.	Bed clothes and towels	Gloves hosiery, and hdkf.	Other wearing apparel	Lace fabric and articles	House-hold and clothing articles	Misc. products	Floor cover-ing	Total All	Grand total imports
1983	40,881	274,467	64,108	380,706	7,721	70,067	25,383	597,423	5,957	11,855	28,426	7,526	754,796	1,135,502
1984	52,897	360,791	90,126	505,533	12,572	106,468	26,609	733,111	9,651	18,652	37,741	14,649	959,942	1,465,575
1985	53,818	341,896	93,569	491,874	17,916	127.494	30,052	865,476	10,372	19,681	46,197	17,984	1,137,294	1,629,166
1986	103,249	431,289	97,468	634,678	19,576	133,637	27,054	988,906	6,787	30,095	46,410	18,389	1,275,799	1,910,477
1987	131,969	559,245	82,529	776,258	20,153	152,745	31,591	1,234,040	7,113	30,758	53,153	20,657	1,559,438	2,335,692
1988	93,189	377,182	77,720	550,451	22,301	161,893	35,762	1,218,801	9,754	34,461	51,596	21,232	1,568,317	2,115,775

Source: Bureau of the Census

Raw Cotton Equivalent of U.S. Textile Exports In Thousands of Pounds

	Semi-Manufactured				Manufactured Products									
							Wearing Apparel							
Year	Yarn	Sewing thread crochet, darning and em-broidery cotton	Fabric standard construc-tions	Other fabric	Total all	Blankets, spreads, pillow cases, and sheets	Towels	Knit	Other than knit	Other house-hold and clothing articles	Floor cover-ing	Indus-trial products	Total all	Grand total exports
1983	18,854	11,577	51,667	7,747	90,636	8,725	5,705	27,957	44,113	13,736	13,986	11,601	128,977	219,614
1984	11,186	8,369	55,848	5,997	82,047	9,008	4,470	25,904	42,360	13,894	9,813	15,014	124,032	206,081
1985	16,843	8,466	74,919	5,134	105,892	9,802	3,582	25,326	30,158	11,037	8,155	16,541	107,332	213,224
1986	9,892	6,049	118,154	6,202	140,925	8,192	4,515	27,413	46,437	13,860	9,793	20,992	133,904	274,828
1987	13,491	5,207	99,536	5,643	124,803	8,516	6,224	47,823	60,584	13,189	12,142	21,673	173,200	298,004
1988	22,678	3,391	87,264	5,747	120,171	10,559	8,093	55,054	68,101	15,626	20,389	27,384	210,100	330,271

Source: Bureau of the Census

Cottonseed and Products

World cottonseed production in 1990/91 was expected to expand to 33.51 million tonnes from 31.18 million a year earlier, as plantings and average yield rose, according to Oil World. In China, the largest producer, output increased to an estimated 7.68 million tonnes from 7.12 million in 1989/90. U.S. production rose to 5.52 million tonnes from 4.24 million the previous season. However, cottonseed output declined in the USSR and Pakistan.

The global cottonseed crush was projected to be 25.81 million tonnes in 1990/91, above 24.26 million the previous season and the highest in many years. World trade in cottonseed was put at 450,000 tonnes, exceeding levels in the previous several years. Australian exports were expected to fall to 130,000 tonnes in 1990/91 from 145,000 a year earlier. U.S. shipments were forecast at 54,000 tonnes, up from 42,000 in 1989/90, and Chinese exports were placed at 45,000 tonnes, above 30,000 the year before.

Global cotton oil production was expected to increase to 3.90 million tonnes in 1990/91 from 3.67 million the previous season. World usage of cotton oil was projected to be the highest in a number of years at 3.86 million tonnes. The price of U.S. cotton oil (cif, Rotterdam) averaged $650 a tonne in 1989/90 (Oct.-Sept.) and fell to an average $642 a tonne in the first five months of 1990/91 (Oct.-Feb.)

World Production of Cottonseed In Thousands of Metric Tons

Crop Year	Argentina	Brazil	China	Egypt	Greece	India	Israel	Mexico	Pakistan	Peru	South Africa	Turkey	United States	USSR	Zimbabwe	World Total
1983–4	326	995	7,883	680	190	2,647	187	377	1,021	100	68	835	2,791	3,980	150	25,248
1984–5	293	1,758	10,639	664	243	3,447	185	459	2,014	145	89	928	4,671	4,760	186	33,915
1985–6	218	1,405	7,050	695	278	3,652	160	355	2,468	167	94	810	4,789	5,100	164	30,631
1986–7	193	1,085	6,018	645	327	3,218	123	243	2,640	109	154	829	3,448	4,870	156	27,230
1987–8	467	1,550	7,217	562	300	3,088	108	370	2,946	143	134	860	5,234	4,485	211	31,310
1988–9[1]	290	1,195	7,053	488	360	3,563	134	601	2,896	155	140	1,000	5,499	5,000	183	32,360
1989–90[2]	325	1,290	6,440	562		4,490		326	2,910			960	4,243	4,700		30,710
1990–1[2]		1,300	7,140			4,530			3,060				5,266	4,930		33,510

[1] Preliminary. [2] Estimated. *Source: Foreign Agricultural Service, U.S.D.A.* T.194

Salient Statistics of Cottonseed in the United States

Yr. Begin. Aug. 1	Stocks	Production	Total Supply	Crush	Exports	Other	Total Disappearance	Farm Price $/Ton	Value of Production Mil. $	Products Produced		
	In Thousand Short Tons									Oil Mil. Lbs.	Meal Ths. Sh. Tons	Linters Ths. Running Bales
1983–4	371	3,076	3,447	2,583	50	698	3,331	166.0	511.5	777	1,134	699
1984–5	116	5,149	5,265	3,514	60	1,285	4,859	100.0	512.0	1,174	1,732	955
1985–6	406	5,279	5,685	3,417	9	1,912	5,338	66.0	347.6	1,070	1,526	936
1986–7	347	3,801	4,148	2,520	17	1,422	3,959	80.0	304.0	781	1,112	669
1987–8	189	5,769	5,958	3,396	50	2,153	5,599	83.0	474.7	1,204	1,647	868
1988–9	359	6,062	6,421	3,730	39	1,987	5,756	118.0	715.3	1,243	1,689	
1989–90[1]	665	4,677	5,342	2,974	42	1,960	4,976	105.0	491.1	1,072	1,365	
1990–1[2]	366	5,804	6,032	3,700	45	2,037	5,782	115.0	667.5	1,240	1,685	

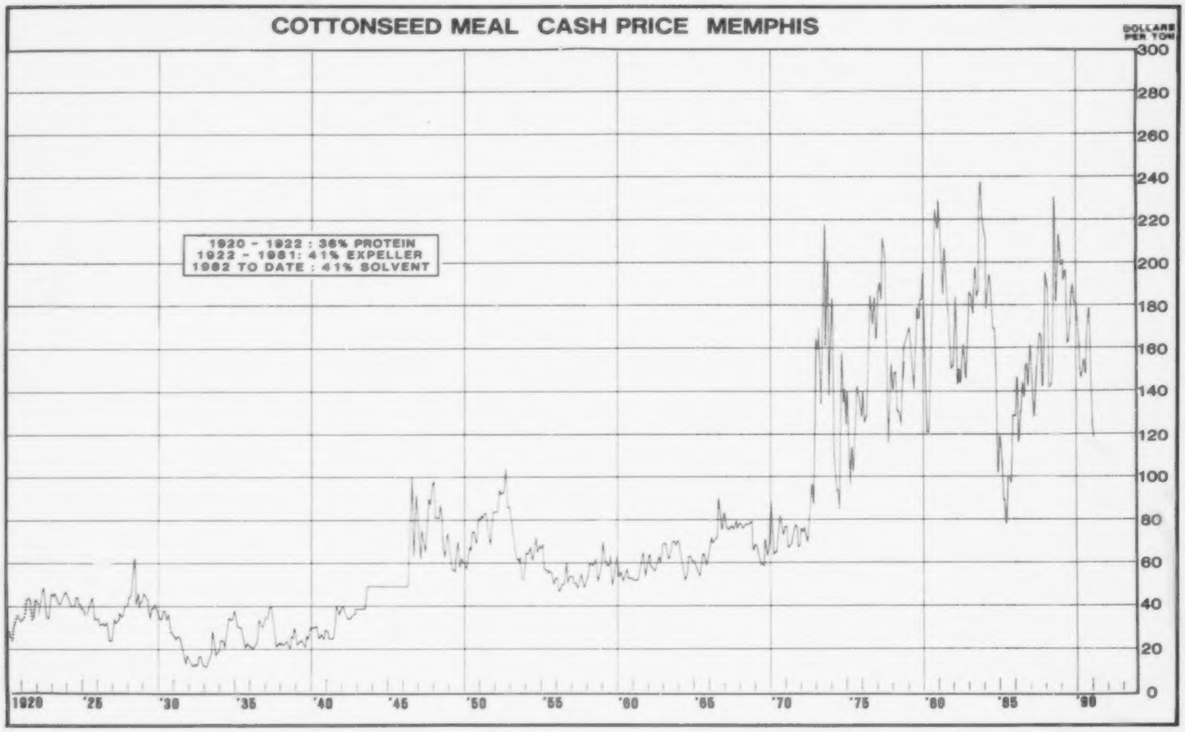
[1] Preliminary. [2] Forecast. *Source: Economic Research Service, U.S.D.A.*

Supply & Distribution of Cottonseed Oil in the United States In Millions of Pounds

Crop Year Beginning Oct.	Production	Imports for Consumption	Stocks Oct. 1	Total Supply	Disappearance			Per Capita Consump. of Salad & Ck. Oils – In Lbs. –	Utilization Food Uses					Prices – $ Tonne –	
					Exports	Domestic	Total		Shortening	Margarine	Salad & Cooking Oils	Other	Total	U.S.[3] (Crude)	Rott[4] (Cif)
1983	777	18	90	885	303	532	835	23.5	143	35	366	17	562	717	844
1984	1,174	—	50	1,224	433	684	1,117	19.8	156	N.A.	399	N.A.	607	643	763
1985–6	1,070	—	107	1,177	442	650	1,092	23.5	202	N.A.	373	N.A.	627	389	513
1986–7	781	11	85	877	214	573	787	24.1	135	36	408	14	494	390	491
1987–8	1,204	25	90	1,319	409	750	1,159	24.7	164	N.A.	579	N.A.	743	481	585
1988–9	1,243	0	160	1,403	406	850	1,256	24.8	191		680		917	439	567
1989–90[1]	1,072	0	147	1,224	340	784	1,124	23.8	160	20	400		750	514	650
1990–1[2]	1,240	0	100	1,345	340	900	1,240							550	655

[1] Preliminary. [2] Estimate. [3] Valley Points FOB; Tank Cars. [4] Rotterdam; USPBY. *Source: Economic Research Service, U.S.D.A.* T.201

COTTONSEED AND PRODUCTS


COTTONSEED MEAL CASH PRICE MEMPHIS

U.S. Consumption of Crude Cottonseed Oil in Refining[1] In Millions of Pounds

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1986–7	75.6	91.1	99.8	106.1	100.0	92.6	77.6	62.1	52.4	46.6	47.2	58.5	909.6
1987–8	74.4	113.4	124.4	122.1	121.8	136.7	120.2	122.8	106.5	112.5	86.9	63.0	1,305
1988–9	97.1	127.5	131.9	144.1	125.8	141.9	117.5	121.4	106.2	74.3	91.1	73.3	1,352
1989–90[1]	87.5	121.1	121.6	133.7	103.4	116.4	83.8	79.1	68.0	53.4	62.2	55.3	1,086

[1] Preliminary. *Source: Bureau of the Census* T.206

U.S. Exports of Cottonseed Oil (Crude & Refined) In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1986	21.9	39.6	32.6	52.6	59.6	27.3	25.1	46.7	13.2	9.3	20.9	25.2	374.0
1987	7.1	14.1	27.5	10.5	25.0	27.0	9.6	12.2	25.8	17.1	32.9	32.8	241.6
1988	24.4	36.6	37.1	50.4	29.9	88.5	18.5	18.6	21.8	6.7	29.1	15.4	377.0
1989	47.2	41.0	49.9	11.8	16.6	14.1	38.7	63.6	72.3	49.1	17.0	40.1	461.4
1990[1]	34.9	37.2	39.2	14.0	39.7	35.6	16.9	21.4					

[1] Preliminary. *Source: Dept. of Commerce* T.205

Average Wholesale Price of Cottonseed Meal (41% Solvent) at Memphis In Dollars Per Short Ton

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	146.25	128.75	115.60	129.25	133.75	132.50	137.00	150.60	152.50	141.90	157.50	160.50	140.51
1987	146.25	138.10	128.00	133.75	149.60	154.50	166.90	163.80	141.50	150.60	177.50	195.00	157.13
1988	187.50	160.00	141.00	143.10	147.50	230.00	223.75	181.00	205.00	212.50	203.00	199.40	186.15
1989	200.50	191.25	196.25	184.40	161.50	163.30	167.50	172.00	190.00	181.25	180.00	180.00	180.66
1990	160.00	150.00	146.25	150.00	155.00	147.50	161.50	169.50	178.75	163.00			

Source: Economic Research Service, U.S.D.A. T.196

Cottonseed Crushed (Consumption) in the United States In Thousands of Short Tons

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
1983–4	166.6	120.7	187.9	301.8	296.6	347.8	289.7	294.7	205.6	173.2	124.3	74.1	2,579
1984–5	70.2	72.6	274.3	423.1	424.2	453.4	394.5	395.3	316.2	279.5	219.6	191.3	3,514
1985–6	194.6	197.0	338.0	411.4	368.8	431.5	361.0	349.8	281.3	213.8	154.5	115.3	3,417
1986–7	141.4	167.7	208.5	262.2	283.2	323.5	278.4	255.8	214.7	171.3	134.2	78.8	2,520
1987–8	71.4	137.7	251.8	344.2	363.2	373.4	352.2	340.1	310.7	312.5	275.5	263.6	3,396
1988–9	216.8	179.5	299.3	375.3	376.7	399.7	325.4	383.3	336.6	321.7	287.0	228.9	3,730
1989–90[1]	218.8	150.6	273.4	338.3	335.1	346.6	285.1	254.8	245.5	201.5	194.9	129.3	2,974
1990–1[1]	157.3	171.1											

[1] Preliminary. *Source: Bureau of Census* T.197

Production of Cottonseed Cake and Meal in the United States In Thousands of Short Tons

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
1983–4	78.8	55.3	86.7	144.5	140.9	162.4	134.7	136.2	95.1	76.7	55.9	35.8	1,203
1984–5	32.2	32.6	127.3	198.4	198.7	207.7	180.4	181.6	145.0	128.8	99.1	86.2	1,619
1985–6	87.9	90.7	153.1	187.6	169.4	199.1	166.4	159.1	128.6	97.5	71.5	51.9	1,563
1986–7	64.4	77.7	95.0	121.2	130.3	151.1	128.7	116.1	100.0	80.0	61.3	37.3	1,163
1987–8	32.2	58.3	121.7	156.9	169.3	169.4	160.2	155.7	144.0	144.0	124.7	120.6	1,557
1988–9	100.7	80.1	135.4	170.0	172.5	183.2	151.6	175.3	152.7	147.6	126.7	106.1	1,702
1989–90[1]	98.5	69.3	123.1	154.9	152.6	157.1	130.6	117.2	112.4	90.7	86.6	55.8	1,517
1990–1[1]	68.7	75.2											

[1] Preliminary. *Source: Bureau of Census* T.198

U.S. Production of Crude Cottonseed Oil In Millions of Pounds

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
1983–4	54.6	37.1	58.6	94.6	93.6	109.5	91.3	96.6	69.3	55.4	40.1	24.4	825
1984–5	21.7	21.6	84.3	132.5	132.5	141.5	124.3	123.3	96.3	87.0	67.7	62.9	1,096
1985–6	60.9	60.7	105.6	129.8	117.1	136.4	115.5	112.0	93.5	69.6	50.1	37.8	1,089
1986–7	48.0	54.5	64.5	83.5	91.4	103.7	90.3	83.3	70.6	55.6	43.5	25.4	814
1987–8	22.6	46.9	84.0	118.2	124.8	125.7	115.8	113.2	104.4	105.8	91.2	91.0	1,144
1988–9	72.7	56.9	98.6	125.3	125.0	129.3	106.0	127.1	111.7	109.7	94.5	76.6	1,233
1989–90[1]	81.9	56.8	97.6	115.3	117.4	118.4	98.2	89.4	88.8	74.7	75.4	48.0	1,062
1990–1[1]	58.7	66.7											

[1] Preliminary. *Source: Bureau of Census* T.199

United States Production of Refined Cottonseed Oil In Millions of Pounds

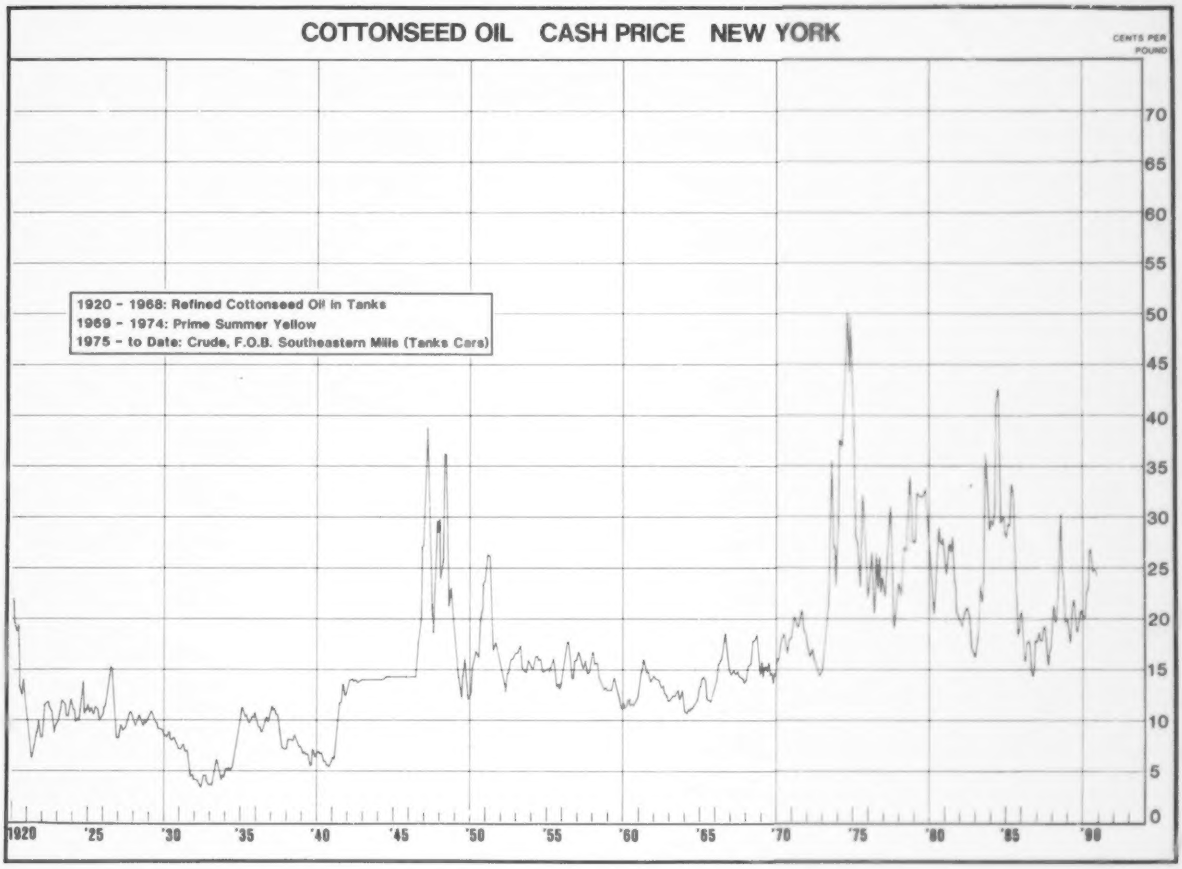
Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
1983–4	55.2	39.2	54.6	91.1	97.7	99.7	98.4	100.6	89.1	71.5	43.4	30.5	871
1984–5	25.7	27.8	64.5	121.4	117.6	135.8	122.2	101.9	93.3	95.4	74.6	68.2	1,043
1985–6	55.9	57.0	87.5	117.1	112.0	119.3	109.3	112.9	95.0	63.7	54.9	42.4	1,027
1986–7	60.3	51.2	73.5	90.9	97.6	103.7	96.8	90.3	74.9	59.8	51.0	45.5	896
1987–8	45.8	56.9	71.5	110.3	120.9	119.9	117.8	132.6	116.5	119.2	103.3	109.6	1,224
1988–9	83.2	61.7	94.1	124.8	127.8	139.7	121.9	137.0	116.3	119.1	102.8	71.6	1,300
1989–90[1]	86.6	69.1	79.8	111.8	111.6	122.3	94.4	107.4	80.4	74.8	65.0	50.8	1,054
1990–1[1]	57.8	52.6											

[1] Preliminary. *Source: Bureau of Census* T.202

U.S. Stocks of Cottonseed Oil (Crude & Refined) at End of Month In Millions of Pounds

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Feb.	Mar.	Apr.	May	June	July
1983–4	96.7	89.6	82.5	108.6	144.6	152.5	152.1	172.6	167.4	131.7	111.5	86.1
1984–5	61.2	49.8	57.6	74.6	79.4	89.6	98.6	114.2	114.7	107.7	105.8	124.4
1985–6	131.2	106.9	106.2	127.9	130.2	162.0	184.1	197.7	179.7	168.0	154.5	110.4
1986–7	90.4	84.9	77.0	101.1	130.6	165.4	188.1	207.5	204.2	236.2	190.8	165.9
1987–8	127.3	90.2	107.2	136.1	169.8	210.0	197.6	184.7	177.2	197.8	175.6	176.0
1988–9	172.9	160.4	163.9	188.6	206.1	266.3	274.0	276.6	263.7	249.2	266.7	247.6
1989–90[1]	191.4	147.3	138.3	163.3	189.6	186.8	180.9	174.8	168.8	156.2	135.6	111.7
1990–1[1]	75.9	84.6										

[1] Preliminary. *Source: Bureau of Census* T.203



Average Price of Crude Cottonseed Oil, F.O.B. Southeastern Mills (Tank Cars) In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	29.8	29.1	30.1	31.4	41.1	42.6	36.3	32.7	31.0	30.6	31.0	29.3	32.9
1985	27.4	30.1	30.2	32.3	33.3	32.6	29.1	23.8	20.7	18.3	18.9	20.6	26.4
1986	19.9	17.6	15.8	17.5	17.7	17.9	17.6	15.1	14.3	15.4	17.4	17.7	17.0
1987	18.38	18.56	17.85	17.88	18.94	19.25	19.00	16.70	15.44	16.75	17.00	18.35	17.84
1988	21.31	20.19	19.60	21.00	22.88	26.65	30.25	15.00	23.00	21.44	19.70	19.94	22.58
1989	19.19	17.56	20.25	21.06	21.80	20.25	19.63	18.60	19.75	19.95	20.81	20.50	19.95
1990	19.95	20.19	22.88	22.83	26.90	26.94	26.00	24.60	24.88	24.80	24.19		

Source: Economic Research Service, U.S.D.A. T.204

U.S. Exports of Cottonseed Oil to Important Countries In Thousands of Metric Tons

Yr. Beg. Oct. 1	Canada	Costa Rica	Dom. Rep.	Egypt	W. Germany	Guatemala	India	Salvador	Japan	Rep. of Korea	Netherlands	South Africa	Mexico	United Kingdom	Venezuela	Total
1983–4	3.5	0	4.5	31.2	7.9	1.1	—	5.3	16.7	2.9	2.1	1.8	.2	3.0	55.4	137.4
1984–5	3.3	1.0	3.9	55.9	—	9.8	—	15.6	22.8	1.8	5.8	2.0	.1	1.5	70.0	196.2
1985–6	2.7	—	5.9	37.8	4.9	11.1	—	29.7	26.3	4.5	8.0	1.6	9.5	.5	48.6	200.7
1986–7	2.9	—	1.9	0	.1	2.2	—	10.9	17.9	5.8	5.0	.5	3.1	0	44.6	97.7
1987–8	4.6	—	6.3	31.5	.1	1.2	—	31.0	21.6	11.5	1.6	0	7.3	—	51.3	185.3
1988–9	5.6	—	—	32.9	.1	5.5	—	22.6	29.4	20.4	4.2	.1	2.8	—	55.0	184.4
1989–90[1]	7.3		11.1	6.5	—	.5		28.9	46.4	31.5	3.2	0	3.2	0	20.6	160.5

[1] Preliminary. *Source: U.S. Bureau of the Census* T.202A

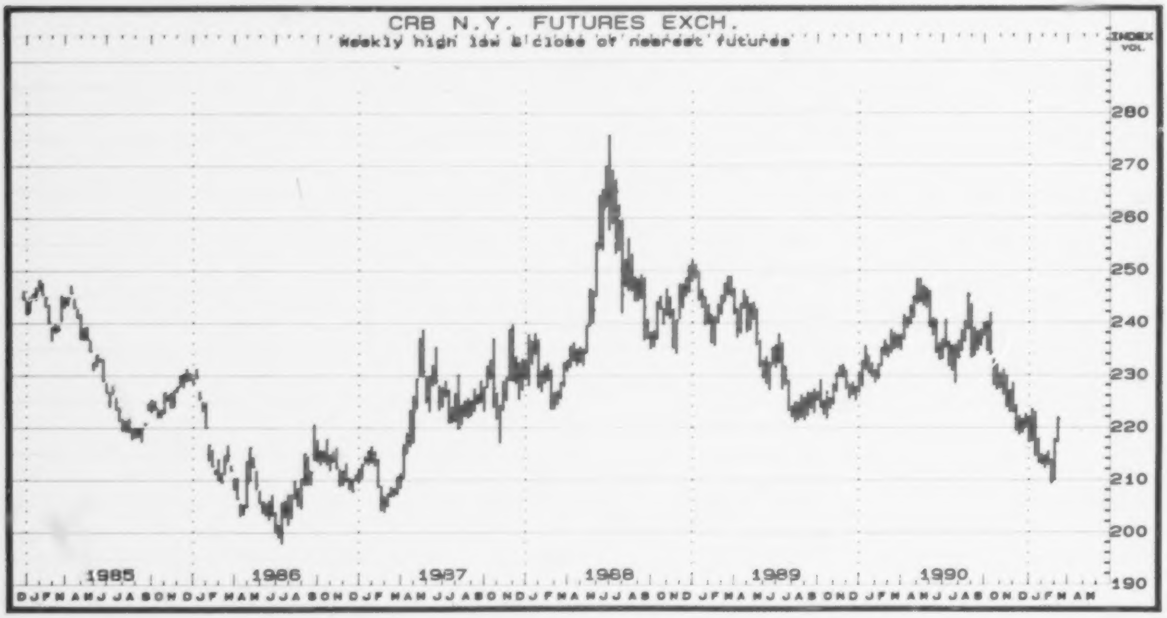
CRB Futures Index

The CRB Futures Index fell by 3.2 percent in 1990, dragged down by sharp declines in the grains, oilseeds, and precious metals groups. The industrials were down slightly on the year, while the imported (softs) group rose, and livestock registered substantial gains. The CRB Index is an indicator which gauges raw materials prices, particularly expectations for prices ahead. The index reflects activity in twenty-one commodity futures markets in the U.S. and is reported on a base of 1967 equals 100 percent.

The CRB Futures Index ended 1990 at 222.64; that was just above the year's low of 220.10, which was posted in December and was the weakest level since late 1987. The index continued to decline in early 1991, as precious metals prices fell further and energy prices retreated.

Futures Market

Futures and options on the CRB Index began trading on the New York Futures Exchange (NYFE) in 1986. The futures contract made it possible to trade broad commodity moves with a single position.



Average Open Interest of CRB Futures at New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
1988	2,597	2,607	2,682	2,819	3,592	3,934	2,846	2,795	2,659	2,419	2,529	2,556
1989	2,679	3,008	2,491	2,274	2,117	2,104	1,891	1,992	1,861	1,907	2,215	2,209
1990	1,889	1,229	1,476	1,858	1,499	1,459	1,289	1,286	1,181	1.247	1,505	1,530
1991	1,443	1,593										

Source:-N.Y. Futures Exchange

Volume of Trading of CRB Futures at New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1988	9,557	10,726	13,841	9,480	20,299	43,591	31,043	22,020	15,615	9,044	9,691	11,044	205.951
1989	8,805	10,045	12,035	11,437	13,145	13,824	11,917	9,846	7,918	7,412	9,613	8,551	124,548
1990	6,505	5,829	7,042	6,670	7,191	6,687	6,477	6,415	4,096	4,744	4,409	3,842	69,907
1991	5,835	5,391											

Source: N.Y. Futures Exchange

Currencies

The dollar was under pressure during most of 1990, partly because the Bush Administration hoped a weak dollar would spur exports and keep the economy from stalling. Pressure also came from the economic factors that drove interest rates higher in Germany and Japan and forced them down in the U.S. The U.S. Dollar Index on the FINEX (Financial Instruments Exchange) ended 1990 at 83.07, down 13.7 percent from its 1989 close, after setting an all-time closing low of 81.46 on November 19.

The FINEX Dollar Index mirrors the Federal Reserve Board's trade-weighted dollar index. The ten currencies and their percentages in each index are: Deutsche mark, 20.8; yen, 13.6; French franc, 13.1; pound sterling, 11.9; Canadian dollar, 9.1; lira, 9.0; Dutch guilder, 8.3; Belgian franc, 6.4; Swedish krona, 4.2; and Swiss franc, 3.6.

The dollar was strongest early in the year, because FOREX markets were concentrating on economic problems elsewhere. The yen weakened as the governing Japanese Liberal Democratic Party faced a February election; however, when the LDP won, the yen began to recover. Similarly, the effects of higher interest rates on West German debt were offset by fears that reunification with East Germany (under which East German Ostmarks were swapped for D-marks at a 1:1 ratio on July 1, 1990) would be inflationary.

However, as Japanese investors repatriated capital, both by selling U.S. real estate holdings and by liquidating overseas stock portfolios, and as the Bundesbank acted to stem the potential inflation from unification, real interest-rate differentials and diverging economies sent the dollar into retreat. The OECD reported that inflation was running at about a 2.5 percent annual rate in Japan, West Germany, and France in the first half of 1990, compared with 5 percent in the U.S. Inflation increased in all these countries in the second half of 1990, but real interest-rate differentials continued to favor investments denominated in yen and D-marks.

East Germany was formally merged into the Federal Republic of Germany on October 3, 1990. The rebuilding of what had been East Germany looked as if it was going to be far more difficult and costly than had been expected. As a result, western Germany's trade surplus turned into a deficit in the fourth quarter. But the D-mark strengthened because of expectations that the capital invested in reconstruction would be put to productive uses. Nevertheless, up to one-third of the workers in the five former East German states were expected to be unemployed by the end of 1991.

The dollar's reputation as a safe haven was tarnished after Iraq invaded Kuwait in August. Its reflex rally was both weak and short-lived, as funds moved into higher-yielding D-mark, Swiss franc and sterling investments instead of T-bills. At the end of the year, the dollar was at 1.4920 D-marks (67.02 cents in American terms) and 135.40 yen (0.7386 cent), down 11.7 percent and 5.9 percent on the year against those currencies.

The Federal Reserve Bank of New York did not intervene while the dollar was declining, according to its reports for May 1990 through January 1991. The nine-month period marked the first time since October 1986 that U.S. monetary authorities had stayed out of the market for so long.

The British pound survived its own crisis in November 1990, when Margaret Thatcher resigned as prime minister and leader of the Tory Party. Sterling was supported then by the high interest rates in the U.K. and by the fact that Britain had entered the exchange rate mechanism of the European Monetary System on October 8. Britain chose to keep sterling within a 6 percent valuation band against the other currencies in the system, at a central rate of 2.95 D-marks to the pound. Mrs. Thatcher's replacement as prime minister was Chancellor of the Exchequer John Major.

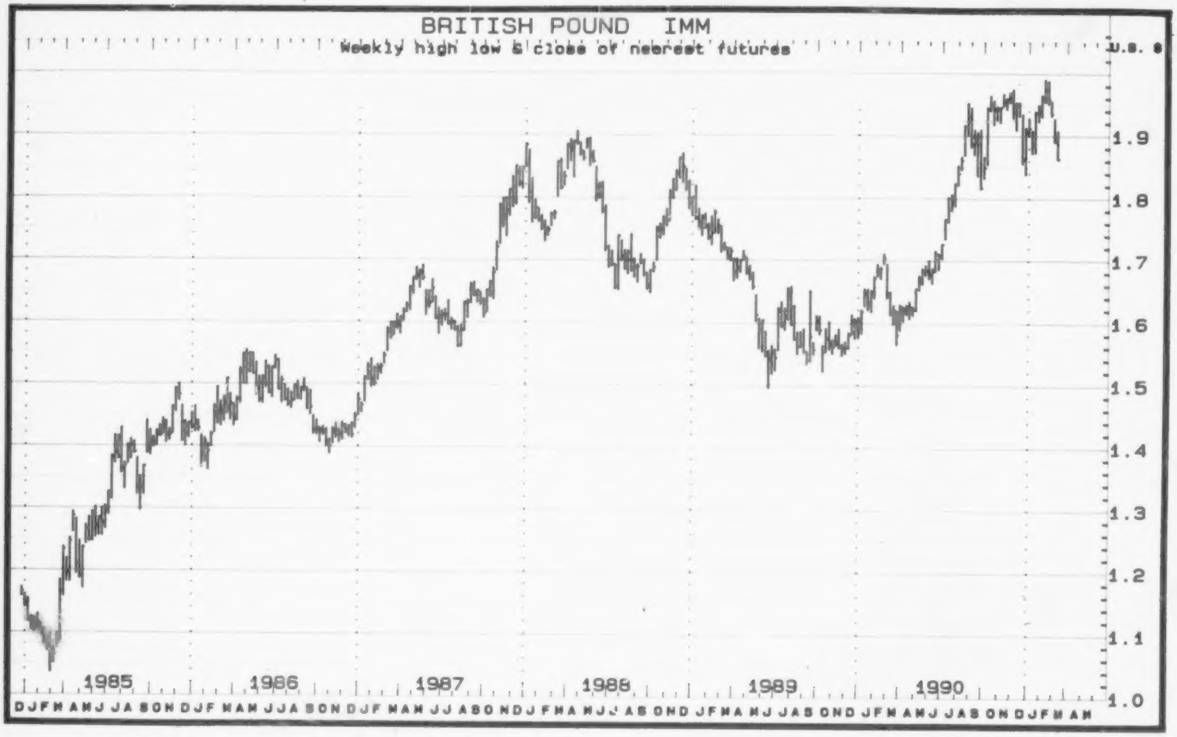
Futures Markets

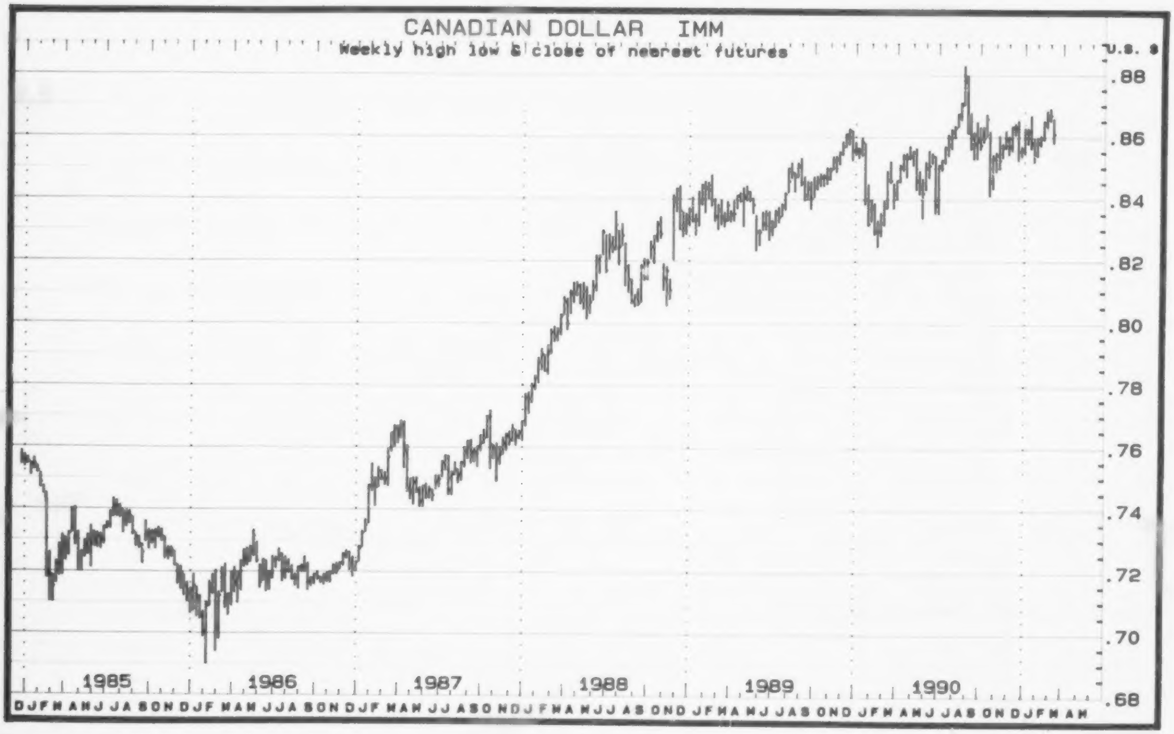
The Chicago Mercantile Exchange's International Monetary Market trades futures and options on futures on the British pound, Swiss franc, D-mark, yen, and the Australian and Canadian dollars. The FINEX division of the New York Cotton Exchange has futures and options on the Dollar Index and the European currency unit. Cash currency options are traded on the Philadelphia Stock Exchange.

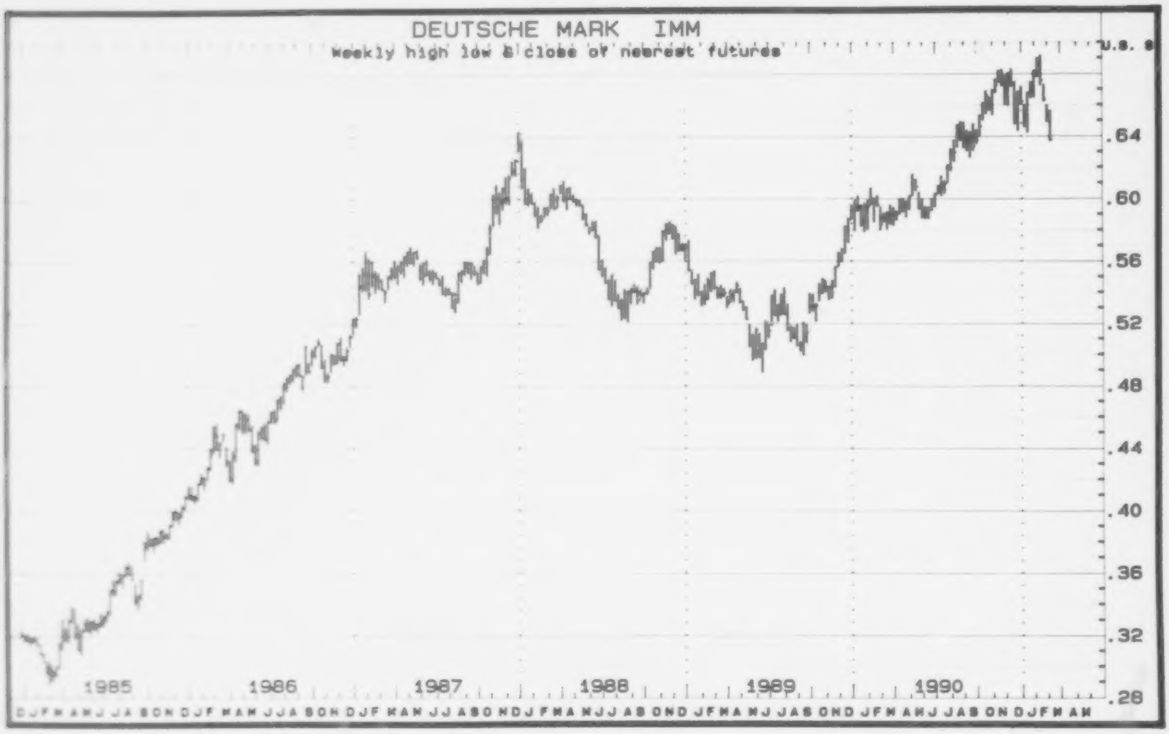
Monthly Close of the CRB Currency Futures Index 1977 = 100

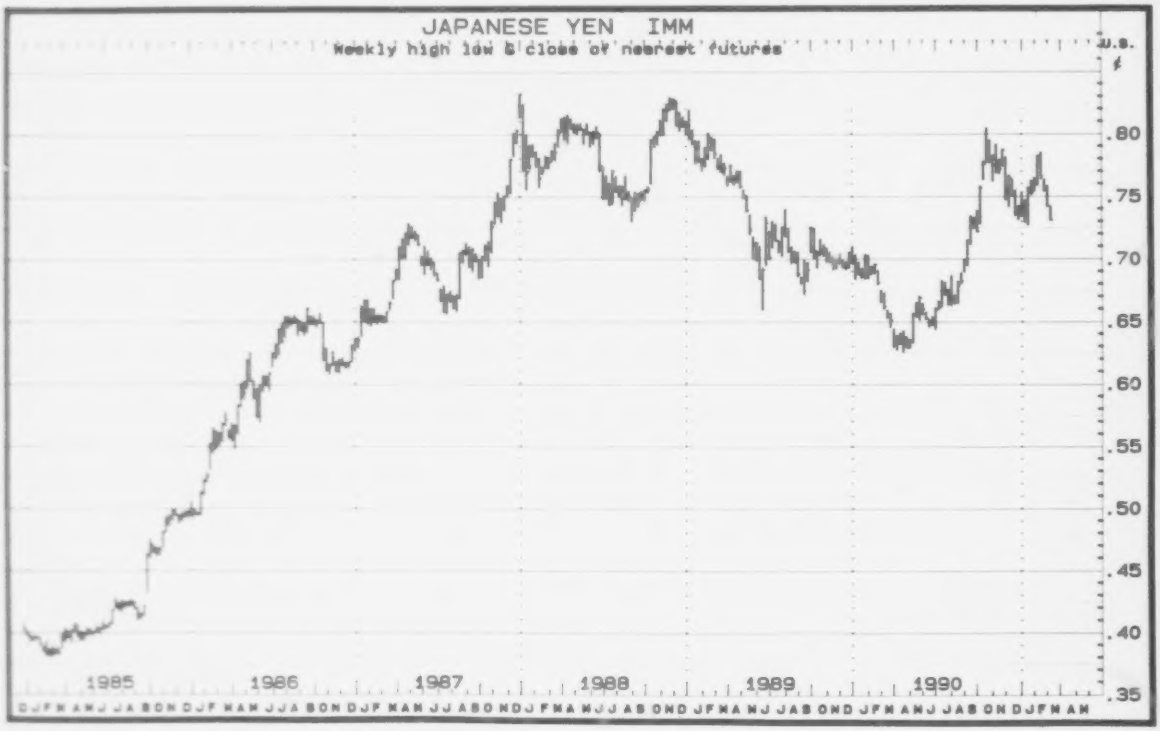
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	99.4	98.8	98.8	99.8	99.0	98.5	96.8	95.7	97.4	97.1	96.3	96.2
1984	93.9	97.1	97.7	95.1	94.1	92.2	88.8	89.8	86.2	86.5	84.3	83.1
1985	81.6	78.0	84.2	83.4	84.8	85.5	91.4	90.3	93.9	95.9	98.7	98.8
1986	99.5	103.9	103.3	108.5	104.3	109.6	112.4	113.2	112.3	109.2	112.0	114.4
1987	118.5	119.5	123.3	125.7	123.4	122.9	120.6	123.8	122.6	128.7	134.8	141.3
1988	134.0	133.6	138.3	137.0	134.5	129.2	127.1	125.1	126.7	131.3	136.3	133.7
1989	128.2	130.0	126.0	125.5	119.3	120.2	125.2	119.7	123.6	122.6	123.9	126.1
1990	127.3	126.3	124.9	125.8	127.5	129.1	134.8	136.6	137.4	141.5	141.8	140.8
1991	142.8	139.8										

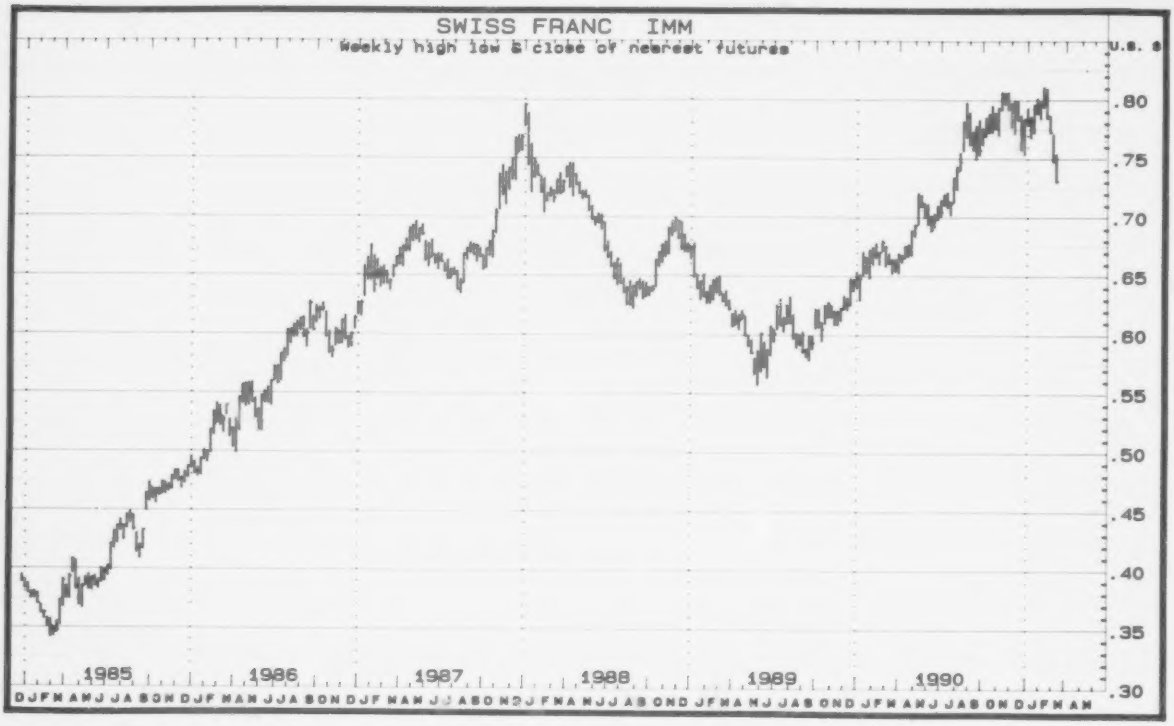
Source: Commodity Research Bureau.


BRITISH POUND IMM
Weekly high low & close of nearest futures
U.S. $
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
1985
1986
1987
1988
1989
1990
D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M


CANADIAN DOLLAR IMM
Weekly high low & close of nearest futures
U.S. $
.88
.86
.84
.82
.80
.78
.76
.74
.72
.70
.68
1985
1986
1987
1988
1989
1990
D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M


DEUTSCHE MARK IMM
Weekly high low & close of nearest futures
U.S. $
.64
.60
.56
.52
.48
.44
.40
.36
.32
.28
1985
1986
1987
1988
1989
1990
D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M


JAPANESE YEN IMM
Weekly high low & close of nearest futures
U.S. ¢
.80
.75
.70
.65
.60
.55
.50
.45
.40
.35
1985
1986
1987
1988
1989
1990
D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M



Canadian Dollars per U.S. Dollar

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	1.407	1.404	1.400	1.387	1.375	1.389	1.380	1.388	1.387	1.388	1.387	1.379	1.389
1987	1.360	1.334	1.319	1.319	1.341	1.338	1.326	1.325	1.315	1.309	1.316	1.307	1.326
1988	1.284	1.268	1.249	1.235	1.237	1.217	1.208	1.224	1.227	1.206	1.218	1.196	1.230
1989	1.191	1.189	1.195	1.189	1.193	1.199	1.189	1.176	1.192	1.202	1.169	1.161	1.187
1990	1.172	1.197	1.180	1.168	1.170	1.170	1.160	1.150	1.160				

Source: Economic Research Service, U.S.D.A.

T.0581

German Marks per U.S. Dollar

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	2.437	2.330	2.276	2.268	2.226	2.232	2.148	2.060	2.040	2.005	2.023	1.988	2.169
1987	1.858	1.823	1.834	1.810	1.787	1.819	1.848	1.855	1.812	1.798	1.682	1.634	1.797
1988	1.654	1.697	1.676	1.671	1.693	1.757	1.846	1.888	1.867	1.817	1.748	1.756	1.755
1989	1.836	1.851	1.869	1.869	1.946	1.979	1.889	1.927	1.949	1.866	1.766	1.736	1.874
1990	1.692	1.677	1.704	1.688	1.660	1.680	1.640	1.570	1.570				

Source: Economic Research Service, U.S.D.A.

T.0582

Japanese Yen per U.S. Dollar

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	199.8	184.8	178.6	174.7	166.9	167.4	158.1	154.1	154.6	156.4	162.8	162.2	168.4
1987	154.7	153.3	151.3	142.8	140.4	144.5	150.3	147.3	143.2	143.1	135.4	128.3	144.6
1988	127.6	129.1	127.0	124.9	124.7	127.4	133.0	133.8	134.3	128.7	123.2	123.6	128.1
1989	127.4	127.7	130.6	132.0	137.9	144.0	140.4	141.4	144.9	141.4	143.4	143.7	137.9
1990	145.0	145.7	153.2	158.4	156.2	153.8	149.0	147.4	138.5				

Source: Economic Research Service, U.S.D.A.

T.0583

CURRENCIES

British Pound Per U.S. Dollar

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	.7014	.6999	.6809	.6671	.6564	.6625	.6631	.6726	.6809	.7006	.7017	.6945	.6818
1987	.6641	.6541	.6278	.6128	.6000	.6139	.6213	.6249	.6077	.6007	.5634	.5471	.6115
1988	.5553	.5689	.5453	.5325	.5346	.5628	.5862	.5889	.5938	.5751	.5528	.5477	.5619
1989	.5368	.5703	.5836	.5880	.6132	.6439	.6142	.6271	.6358	.6443	.6356	.6247	.6098
1990	.6054	.5898	.6155	.6100	.6000	.6300	.5500	.5300					

Source: International Monetary Market (Chicago)

Average Open Interest of British Pound Futures in Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1986	32,125	41,716	35,588	33,259	33,737	27,316	28,805	29,969	33,536	37,910	33,332	25,696
1987	27,535	30,539	44,786	39,453	44,235	39,266	36,803	42,365	36,672	37,032	43,073	36,700
1988	29,433	40,278	41,665	43,291	45,745	29,892	18,052	18,917	18,149	17,930	21,850	23,829
1989	22,870	24,705	27,436	21,170	25,871	26,512	22,899	22,559	27,661	21,971	24,850	26,124
1990	23,272	30,729	26,219	23,909	33,355	35,528	37,898	41,820	33,458	32,213	39,623	32,790
1991	23,686	34,680										

Average Open Interest of Canadian Dollar Futures in Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1986	15,690	14,799	12,940	11,768	14,533	11,188	11,563	16,083	13,168	11,173	14,131	16,213
1987	16,546	24,662	28,830	26,584	25,050	22,193	22,005	19,876	22,244	21,292	18,744	16,504
1988	22,411	24,244	22,965	24,095	27,747	35,787	33,207	28,513	22,645	23,138	19,548	24,844
1989	24,221	27,726	23,102	21,146	24,900	24,807	20,007	31,041	27,206	25,903	29,645	29,116
1990	26,426	29,204	23,848	24,048	33,823	30,809	39,843	42,092	34,998	29,434	31,250	25,272
1991	29,072	28,214										

Average Open Interest of Deutschemark Futures in Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1986	52,278	63,742	62,828	57,514	56,580	41,965	47,942	53,932	49,927	54,119	50,391	48,222
1987	55,518	57,619	47,105	44,425	54,018	42,127	37,790	47,875	39,754	36,319	52,866	48,644
1988	32,849	45,974	42,134	37,759	53,511	60,575	48,574	60,803	48,777	46,456	53,695	46,461
1989	51,439	65,251	52,869	52,693	70,062	72,766	62,365	66,520	65,666	70,976	91,393	93,491
1990	63,745	73,216	72,357	63,058	70,475	65,113	64,765	72,684	58,241	61,839	76,650	67,322
1991	51,211	73,463										

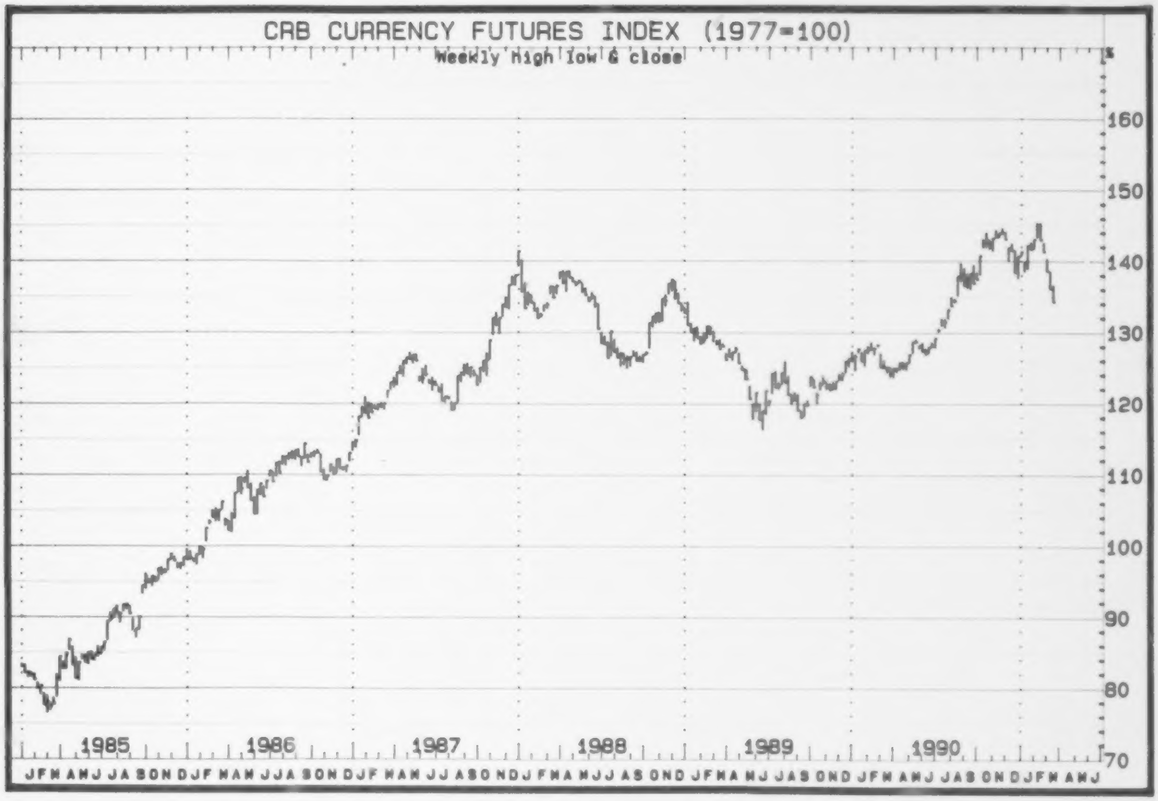
Average Open Interest of Japanese Yen Futures in Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1986	27,017	34,597	37,098	33,228	40,723	34,143	47,987	45,119	40,174	35,781	42,359	32,156
1987	31,056	31,040	35,526	47,220	47,151	36,330	35,526	41,918	49,034	42,477	54,093	51,804
1988	48,680	54,426	54,728	45,399	49,150	45,113	49,300	51,337	49.228	45,162	54,522	47,509
1989	39,467	48,400	53,654	52,013	67,213	73,355	48,261	60,235	71,230	50,594	60,283	57,748
1990	60,012	67,723	82,783	71,709	79,850	62,252	62,760	65,050	77,686	74,890	77,115	65,365
1991	43,552	64,694										

Average Open Interest of Swiss Franc Futures in Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1986	27,971	33,969	32,182	31,225	31,888	26,285	33,699	38,271	34,813	31,620	32,357	26,856
1987	30,600	35,576	30,208	31,226	34,140	28,592	27,380	30,406	28,379	25,998	36,015	31,866
1988	25,852	32,781	26,245	25,640	36,244	33,748	28,750	33,839	29,886	25,733	37,820	29,276
1989	27,442	31,287	34,749	34,074	42,256	36,445	35,625	41,613	38,429	31,432	39,757	47,927
1990	36,339	42,435	34,953	32,853	45,464	42,862	39,769	48,544	40,269	37,216	44,166	37,220
1991	31,489	36,483										

Source: International Monetary Market (Chicago)



United States Merchandise Trade Balance In Millions of Dollars

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1985	-11,408	- 8,095	- 8,960	-10,588	-10,387	-12,068	-10,447	- 9,846	-14,559	-10,561	-12,267	-13,311	-126,461
1986	-12,166	- 9,027	- 9,961	-11,618	-10,706	-10,212	-13,056	-12,157	-13,144	-12,470	-13,140	-10,623	-138,279
1987	-13,453	-10,956	-10,628	-11,613	-12,410	-13,721	-14,431	-13,747	-12,484	-15,298	-11,932	-11,445	-152,119
1988	- 9,874	-11,179	- 7,656	- 8,233	- 7,915	-11,738	-10,211	-11,006	- 9,237	-10,251	-10,824	-10,402	-118,526
1989[1]	- 8,639	- 8,622	- 6,954	- 7,191	- 9,463	- 8,724	-10,582	-11,034	- 8,971	-11,780	-10,754	- 6,687	-109,399
1990[1]	- 9,814	- 6,209	- 6,126	- 6,112	- 6,925	- 6,196	-10,510	-10,515	- 9,573	-12,805	- 9,996	- 6,217	-100,997

[1] Preliminary. *Source: Bureau of the Census*

Index of Real Trade-Weighted Dollar Exchange Rates for Total Agriculture[2] 1985 = 100

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1988 U.S. Markets	76.4	76.8	75.8	74.8	74.9	76.0	77.8	78.3	79.3	77.8	75.7	75.6
U.S. Competitors	83.1	83.4	82.6	81.9	81.8	82.2	83.2	84.2	84.4	83.5	82.1	81.9
1989 U.S. Markets	77.2	77.5	79.4	79.1	81.0	82.1	79.5	80.6	81.4	79.5	79.5	78.5
U.S. Competitors	82.1	81.4	81.9	85.0	88.7	88.7	86.8	85.7	85.2	83.7	82.4	83.9
1990[3] U.S. Markets	78.3	78.1	79.3	79.4	78.5	78.9	79.2	79.1	78.5	76.6	76.1	77.0
U.S. Competitors	80.1	81.2	79.6	79.2	77.8	77.5	76.4	76.1	76.3	76.0	75.9	76.3

[1] Preliminary. [2] Real indexes adjust nominal exchange rates for differences in rates of inflation, to avoid the distortion caused by high-inflation countries. A higher value means the dollar has appreciated. Federal Reserve Board Index of trade-weighted value of the U.S. dollar against 10 major currencies. Weights are based on relative importance in world financial markets. [3] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.0589

Eggs

U.S. egg production was estimated at 5.66 billion dozen in 1990, about 1 percent higher than the 1989 level. The increase was not as great as had been expected initially, as producers responded cautiously to favorable net returns. Production of cartoned eggs was restrained somewhat, due to restrictions on some Midwestern production facilities after salmonella infections were detected. In some cases, eggs from infected flocks were diverted to breaking plants for pasteurized products. This diversion provided support for table egg prices.

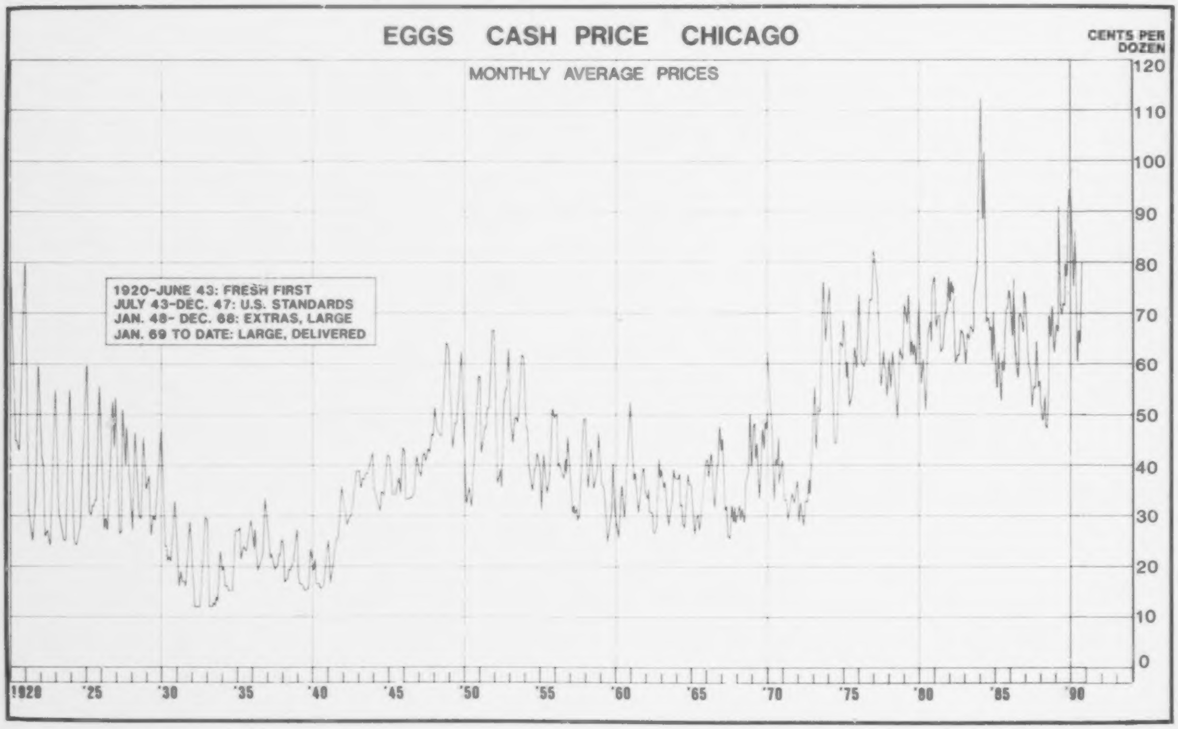
Per capita egg consumption in the U.S. was just over 234 in 1990, down slightly from the 1989 level. The decline in consumption was slower than in recent years. Table egg consumption has dropped steadily over the past several years, due primarily to health concerns. Egg product usage was up 12 percent in 1990, however, and helped to offset the lower table egg consumption.

Egg product usage has played an increasingly important role in total egg demand. This category includes cakes, pasta, ice cream, and some non-food items, such as shampoo and pharmaceuticals. For the year, per capita egg product consumption was about 46 eggs, or 22 percent of total utilization. Total per capita egg consumption was expected to fall slightly in 1991 to 233.

Total U.S. egg exports were down 5 percent in 1990, to about 87 million dozen. A major reason for the drop was reduced egg product exports to Japan. The EC became the leading egg supplier to Japan. U.S. exports to Canada were up sharply for the year, as production in that country declined for the second consecutive year. Exports to Hong Kong were also higher on strong sales under the Export Enhancement Program, designed to prevent the EC from cracking that country's lucrative market.

The U.S. imported about 12 million dozen eggs (shell equivalent) in 1990, down from the previous year's unusually high 25 million. The majority of imports were shell eggs, with Germany and Finland the leading suppliers.

Despite initial expectations for lower prices, wholesale prices (Grade A large eggs) in 1990 were a record 82.2 cents per dozen. Retail prices averaged $1.01 per dozen in 1990, slightly above a year earlier. Seasonal strength supported prices late in the year. Net returns were positive throughout the year, averaging 16 cents per dozen for all of 1990. Positive returns were expected again in 1991.



World Production[2] of Eggs In Billions of Eggs

Year	Argentina	Australia	Bel. & Lux.	Brazil	Canada	Israel	France	West Germany	Italy	Japan	Netherlands	Poland	Spain	South Africa	USSR	United Kingdom[3]	United States
1982	3.2	3.4	3.3	10.2	5.9	1.8	15.9	13.1	11.2	34.3	10.7	7.6	12.4	3.1	72.4	13.5	69.6
1983	3.3	3.5	3.2	10.0	6.1	1.8	15.0	13.0	10.9	34.8	10.7	7.6	12.2	3.3	75.1	13.2	67.9
1984	3.2	3.5	3.1	9.5	5.9	2.1	14.9	13.2	10.8	35.5	11.1	8.2	10.1	3.3	76.5	13.0	68.5
1985	3.2	3.3	3.0	11.8	5.9	2.1	14.9	12.8	10.9	35.7	11.1	8.6	10.2	3.2	77.3	13.1	68.3
1986	3.2	3.2	2.9	13.0	5.9	1.8	15.0	12.8	10.3	37.1	10.9	8.3	10.9	3.2	79.9	13.2	69.2
1987	3.3	3.2	2.9	15.4	5.7	1.7	14.5	12.3	10.7	39.6	10.9	8.0	10.5	3.4	81.9	13.3	70.4
1988	3.3	3.2	2.8	14.9	5.7	1.9	15.3	12.3	11.2	40.1	10.8	8.2	10.9	3.7	85.2	13.5	69.4
1989[1]	3.4	3.3	2.7	12.2	5.5	1.9	15.2	11.9	11.2	40.4	10.7	8.2	10.1	4.0	84.6	12.3	67.0
1990[4]	3.7	3.5	2.8	13.4	5.3	1.9	15.1	11.9	11.5	40.0	10.9	7.4	10.1	4.0	84.5	12.0	67.8

[1] Preliminary. [2] Relates to farm production in Canada and the United States. Information for many countries is not explicit on this point. [3] Farm production, years ending May. [4] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.210

Salient Egg Statistics in the United States

Year	Hens & Pullets — On Farms Dec. 1[2]	Hens & Pullets — Avg. Number During Year	Rate of Lay Per Layer During Year[3]	Eggs — Total Produced	Eggs — Price (in ¢) Per Dozen	Eggs — Consumed[4] on Farms	Eggs — Sold	Gross Income[5] Billion	Total Egg Production[6]	Imports[7]	Exports[7] and Shipments	Used for Hatching	Civilian Consumption — Total	Civilian Consumption — Per Capita Eggs
	Millions	Millions	Number	Billions		Billions	Billions	$	Million Dozen	Million Dozen	Million Dozen	Million Dozen	Million Dozen	(Number)
1982	289.6	286.4	243	69.7	59.5	.43	69.29	3.46	5,802	2	185	506	5,111	265.2
1983	278.5	276.3	247	68.2	61.1	.42	67.75	3.47	5,659	23	112	500	5,081	261.1
1984	285.8	278.0	245	68.2	72.3	.39	67.84	4.11	5,708	32	86	530	5,123	260.8
1985	279.8	276.7	247	68.4	57.1	—— N.A. ——		3.25	5,688	13	101	548	5,052	256.0
1986	279.9	276.3	248	68.4	61.6			3.51	5,704	14	130	567	5,023	253.9
1987	288.3	280.6	248	69.5	54.9			3.18	5,802	6	136	599	5,068	253.8
1988	275.4	277.1	251	69.4	63.9			3.06	5,772	5	142	606	5,030	245.0
1989[1]	270.6	269.3	250	67.2	85.1				5,598	25	92	643	4,893	236.0
1990[8]	275.1	269.7	252	67.8	83.9				5,659	9	101	676	4,891	232.3

[1] Preliminary. [2] Of laying age. [3] Number of eggs produced during the year divided by the average number of hens & pullets of laying age on hand during the year. [4] Consumed in households of farm producers. [5] Value of sales plus value of eggs consumed in households of producers. [6] Farm production, plus nonfarm output estimated at 1 percentage point less each year. [7] Shell-egg equivalent of eggs and egg products. [8] Estimate. *Source: Agricultural Marketing Service, U.S.D.A.* T.211

Average Wholesale Prices of Shell Eggs (Large) Delivered, Chicago In Cents Per Dozen

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1982	76.2	74.2	75.2	68.3	60.4	60.8	61.7	61.6	65.9	66.8	66.2	64.1	66.8
1983	60.2	62.7	66.2	64.9	68.4	68.0	66.2	74.4	76.2	77.9	88.4	98.6	72.7
1984	112.3	102.6	88.3	101.8	74.3	68.1	69.0	66.5	67.2	60.7	70.4	62.2	78.6
1985	58.4	55.1	62.3	57.3	52.9	60.8	58.6	66.4	70.5	70.7	74.6	73.2	63.4
1986	70.6	65.7	76.9	62.6	62.0	57.3	69.4	70.0	69.4	66.3	74.1	72.8	68.1
1987	64.4	62.0	59.2	59.0	51.8	55.6	55.4	58.7	64.8	55.5	56.3	52.1	57.9
1988	51.2	48.9	53.6	47.9	47.1	52.8	69.8	65.4	71.4	63.1	62.2	66.1	58.3
1989[1]	67.8	66.6	91.0	71.6	69.8	72.0	71.8	79.6	77.2	79.4	89.1	94.3	77.7
1990[1]	88.6	75.1	86.1	78.6	60.3	66.9	64.2	73.9	75.4	80.0			

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.212

Total Egg Production in the United States In Millions of Eggs

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total[2]
1982	5,958	5,333	—— 17,557 ——			—— 17,231 ——			—— 17,419 ——			6,030	69,718
1983	5,931	5,354	5,928	5,622	5,711	5,526	5,666	5,639	5,493	5,699	5,570	5,772	68,169
1984	5,685	5,326	5,796	5,643	5,742	5,525	5,750	5,766	5,622	5,856	5,747	6,040	68,230
1985	5,950	5,293	5,923	5,670	5,721	5,499	5,661	5,686	5,545	5,761	5,658	5,889	68,256
1986	5,856	5,292	5,899	5,641	5,779	5,593	5,689	5,701	5,536	5,793	5,730	6,022	68,531
1987	5,989	5,417	6,093	5,864	5,925	5,685	5,863	5,861	5,756	6,008	5,873	6,084	70,418
1988	6,047	5,667	6,050	5,767	5,839	5,575	5,740	5,762	5,589	5,838	5,697	5,839	69,402
1989	5,758	5,182	5,782	5,569	5,696	5,498	5,648	5,613	5,450	5,658	5,543	5,777	67,041
1990[1]	5,702	5,165	5,829	5,646	5,757	5,526	5,703	5,719	5,534	5,785	5,689	5,855	

[1] Preliminary. [2] Dec. 1 previous year thru Nov. 30. *Source: Crop Reporting Board, U.S.D.A.* T.219

EGGS

Shell Eggs: Civilian Per Capita Disappearance in the United States Number of Eggs

	Shell Equivalent														
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total[1]	Processed[2]	Total
1979	21.3	18.5	21.0	20.0	20.1	19.2	20.1	19.9	19.8	20.2	20.2	21.8	242	36	278
1980	21.1	19.0	20.9	19.4	19.8	18.7	19.0	19.6	19.4	19.8	20.0	20.7	237.3	35	272
1981	58.5			56.7			57.3			60.7			233.1	33	265
1982	58.6			57.0			56.5			59.1			231.2	34	265
1983	57.8			55.5			55.0			57.6			225.9	35	261
1984	55.7			54.8			55.2			57.7			223.4	38	261
1985	55.3			52.2			52.5			54.7			214.6	38	253
1986	54.0			51.5			51.2			53.8			210.5	39	250
1987	53.3			52.0			51.9			53.4			210.6	43	254
1988	52.9			49.1			49.1			50.4			201.6	44	246
1989[3]	48.7			46.8			47.0			48.7			190.6	43	234
1990[3]	46.6			46.1			45.8								

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[1] Monthly totals do not necessarily add to yearly figures due to rounding. [2] Liquid, frozen, & dried egg (egg solids) converted to shell egg equivalent. [3] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.214

Egg-Feed Ratio[1] in the United States

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1980	6.6	6.0	6.4	6.0	5.4	5.6	5.7	6.0	6.2	5.7	6.0	6.6	6.0
1981	5.9	5.7	5.6	5.9	5.2	5.2	5.5	5.8	6.4	6.5	7.2	6.7	6.0
1982	6.6	6.8	7.1	6.6	5.6	5.3	5.7	5.4	6.0	6.3	6.3	6.0	6.2
1983	5.7	5.8	6.1	5.8	6.0	5.8	5.7	6.1	6.0	6.2	6.9	7.7	6.0
1984	8.8	8.5	7.4	8.5	6.5	5.8	5.8	5.8	5.9	5.7	6.5	6.3	6.8
1985	5.5	5.6	6.3	5.7	5.5	5.9	5.9	6.5	7.1	7.3	7.5	7.4	6.3
1986	7.2	6.9	7.6	6.4	6.4	5.7	6.9	7.3	7.3	7.0	8.0	7.8	7.0
1987	7.3	7.1	6.6	6.6	5.9	6.0	5.7	5.6	6.5	6.0	6.4	5.7	6.3
1988	5.6	5.3	5.6	5.2	5.0	5.3	4.9	4.9	5.4	5.3	5.4	5.4	5.3
1989[2]	6.0	5.8	7.4	6.3	5.9	6.1	6.2	6.9	6.8	7.2	7.9	8.3	6.7
1990[3]	8.4	7.1	8.0	6.6	5.2	5.6	5.4	6.4	6.7	7.4	7.3		

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[1] Pounds of laying feed equivalent in value to one dozen eggs. [2] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.215

Total Eggs—U.S. Supply and Distribution In Millions of Dozen

	Supply				Utilization					
								Domestic Disappearance		
									Civilian[1]	
Year & Quarters	Production	Imports[1]	Beginning Stocks[1]	Total Supply	Ending Stocks[1]	Exports & Shipments[1]	Eggs Used for Hatching	Military	Total	Per Capita (Number)
1985 I	1,431	2.2	11.1	1,444	11.0	24.6	136.1	5.1	1,272	64.0
II	1,408	3.3	11.0	1,422	12.2	24.5	139.7	5.6	1,245	62.6
III	1,408	2.3	12.2	1,422	13.1	25.1	133.7	4.5	1,250	62.7
IV	1,442	4.9	13.1	1,460	10.7	27.0	138.6	5.0	1,284	64.2
1986 I	1,421	3.6	10.7	1,435	8.7	33.5	139.2	4.6	1,254	62.5
II	1,418	4.0	8.7	1,431	11.9	28.2	145.1	4.2	1,245	62.0
III	1,411	2.2	11.9	1,425	11.5	36.5	141.4	4.5	1,235	61.3
IV	1,456	3.9	11.5	1,471	10.4	31.4	141.2	4.2	1,288	63.8
1987 I	1,458	2.6	10.4	1,471	11.9	23.6	147.6	4.5	1,288	63.6
II	1,456	1.2	11.9	1,469	13.8	23.7	154.9	4.1	1,277	62.9
III	1,457	1.0	13.8	1,472	13.5	21.5	149.2	4.6	1,287	63.2
IV	1,497	.8	13.5	1,511	14.4	42.4	147.4		1,307	64.0
1988 I	1,480	.9	14.4	1,496	11.7	33.7	150.2		1,300	63.5
II	1,432	.7	11.7	1,444	20.1	34.1	153.8		1,236	60.3
III	1,424	2.1	20.1	1,447	17.6	33.4	151.2		1,244	60.5
IV	1,447	1.6	17.6	1,466	15.2	40.6	150.6		1,260	61.1
1989[2] I	1,389	1.9	15.2	1,406	11.7	23.7	155.3		1,215	58.8
II	1,394	8.2	11.7	1,414	12.2	21.2	165.4		1,215	58.7
III	1,389	10.4	12.2	1,412	11.6	23.2	161.4		1,216	58.6
IV	1,415	4.6	11.6	1,431	10.7	23.5	160.5		1,236	59.4
1990[2] I	1,390	1.9	10.7	1,403	13.4	18.4	167.3		1,204	57.7
II	1,413	4.1	13.4	1,430	14.4	18.8	173.1		1,224	58.6
III	1,412	2.7	14.4	1,430	12.0	25.0	168.9		1,224	58.5

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[1] Shell eggs & the approx. shell-egg equivalent of egg product. [2] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.213

Hens and Pullets of Laying Age (Layers) in the U.S., First of Month In Millions

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1983	285.8	283.3	280.5	276.9	273.0	271.8	270.1	269.7	271.5	272.2	276.4	278.5
1984	277.2	276.5	277.0	278.9	276.1	276.2	276.5	274.3	277.8	280.5	282.2	285.8
1985	286.9	281.7	279.0	276.2	272.6	269.1	269.7	271.2	273.8	276.0	280.9	279.8
1986	280.2	279.5	279.2	277.3	275.0	272.9	270.7	272.3	272.6	275.8	279.3	279.9
1987	282.7	283.8	282.6	282.4	279.0	277.3	275.5	277.1	278.8	282.6	282.9	288.3
1988	286.5	285.7	283.2	279.2	277.4	272.5	270.3	271.2	273.1	275.2	276.4	275.4
1989	272.2	272.8	271.6	269.3	267.3	267.2	267.1	266.3	267.7	267.9	270.0	271.1
1990[1]	270.9	272.4	271.4	272.4	270.3	168.7	265.4	266.8	266.9	269.2	270.1	275.1

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.216

Eggs Laid Per Hundred Layers in the United States In Number of Eggs

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1983	2,084	1,899	2,127	2,045	2,096	2,039	2,099	2,084	2,021	2,078	2,008	2,078	2,468
1984	2,054	1,925	2,085	2,032	2,079	1,999	2,086	2,088	2,013	2,080	2,023	2,109	2,046
1985	2,093	1,887	2,134	2,066	2,112	2,041	2,093	2,086	2,017	2,069	2,018	2,103	2,060
1986	2,092	1,894	2,120	2,043	2,110	2,058	2,095	2,092	2,019	2,087	2,051	2,115	2,065
1987	2,089	1,890	2,132	2,069	2,106	2,033	2,097	2,083	2,024	2,098	2,042	2,117	2,065
1988	2,114	1,992	2,151	2,072	2,123	2,054	2,120	2,117	2,039	2,117	2,065	2,132	2,091
1989	2,112	1,903	2,137	2,075	2,131	2,057	2,117	2,102	2,035	2,103	2,048	2,131	2,079
1990[1]	2,131	2,098	1,899	2,143	2,080	2,136	2,069	2,142	2,062	2,137	2,093	2,152	2,095

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.221

Egg-Type Chicks Hatched by Commercial Hatcheries in the United States In Millions

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	32.6	33.0	39.3	36.7	38.3	37.5	30.5	30.9	31.8	32.3	29.6	34.4	406.9
1984	36.9	37.5	45.7	47.9	49.0	46.5	38.4	34.8	33.1	31.4	30.1	27.1	458.5
1985	28.3	28.4	36.9	40.9	39.0	33.8	32.1	32.5	33.6	33.6	33.6	34.2	406.8
1986	34.5	34.8	39.5	42.4	42.5	37.3	33.6	33.4	32.6	32.4	27.5	33.3	423.7
1987	34.2	35.8	41.7	42.4	40.9	37.3	33.4	34.7	31.8	34.0	30.6	31.2	427.8
1988	29.3	28.4	35.6	34.7	36.0	33.0	24.9	27.8	30.9	31.0	29.4	27.2	368.3
1989	26.7	27.4	32.6	36.1	38.5	34.7	29.8	32.8	32.9	33.3	29.7	29.3	383.7
1990[1]	32.0	32.2	36.4	37.2	37.7	34.5	31.7	33.0	32.7	32.1	30.0	31.1	400.8

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.220

U.S. Cold Storage Holdings of Shell Eggs, 1st of Month In Thousands of Cases (One Case = 30 Dozen)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	34	35	25	18	23	32	44	24	25	25	45	18
1984	13	28	17	36	35	41	42	29	31	23	37	35
1985	31	30	29	23	26	30	21	30	20	22	23	28
1986	24	28	21	20	32	44	38	25	33	29	20	29
1987	22	20	25	32	28	38	32	34	32	33	51	40
1988	43	67	53	33	14	21	30	28	25	23	24	26
1989	9	12	7	16	18	26	27	12	17	23	6	11
1990[1]	12	22	16	23	12	21	22	29	19	18	11	16

[1] Preliminary. *Source: Crop Reporting, Board U.S.D.A.* T.217

U.S. Cold Storage Holdings of Frozen Eggs, 1st of Month In Millions of Pounds[1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	25.4	25.5	25.7	23.1	22.5	21.2	21.1	20.4	19.0	16.4	14.2	13.4
1984	11.8	11.0	11.4	12.0	12.7	12.8	16.4	17.5	16.6	16.7	17.9	16.2
1985	13.4	14.9	13.9	13.5	13.2	14.4	15.3	18.0	18.4	16.4	15.1	13.8
1986	13.2	12.7	12.8	10.7	12.5	11.6	14.2	15.1	15.0	14.0	14.0	13.0
1987	12.8	14.3	13.5	14.5	14.9	17.4	16.9	17.3	17.5	16.5	17.9	17.4
1988	17.3	18.3	18.3	14.1	17.3	20.3	25.3	22.9	24.5	22.2	20.0	17.9
1989	19.6	19.7	19.0	14.8	15.3	16.2	15.1	16.5	15.0	14.4	14.9	13.4
1990[2]	13.6	14.2	15.2	16.8	19.7	16.8	18.1	17.1	17.1	16.6	16.8	17.2

[1] Converted on basis 39.5 pounds frozen eggs equals 1 case. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.218

Electric Power

U.S. electricity sales rose an estimated 2.7 percent in 1990 to 2.705 trillion kilowatt-hours and were expected to increase by 2.6 percent in 1991. A mild winter initially reduced 1990 demand, but use picked up sharply, as summer temperatures rose and 1990 proved to be the warmest year since the U.S. began keeping records. With strong demand from air conditioning, residential electricity sales rose by 2.6 percent in 1990 to 927.9 billion kilowatt-hours and were expected to increase by 3.5 percent in 1991, according to the Department of Energy.

Although the economy lapsed into recession during the second half of 1990, industrial electricity use gained by 2.6 percent for the year to 939 billion kilowatt-hours. Demand in 1991 was expected to expand by 1.4 percent, despite the economy's continued sluggishness. Commercial use, which rose by 3 percent in 1990, was expected to increase by 3.1 percent in 1991 to 768.8 billion kilowatt-hours.

The Nuclear Regulatory Commission approved a full-power operating license for the Seabrook, N.H., power plant on March 1, 1990, almost fourteen years after construction began and four years after it was completed. The 1,150-megawatt plant had faced years of legal challenges that forced its largest shareholder, Public Service of New Hampshire, into bankruptcy in 1988. Despite the Seabrook start-up, the New England region, as well as most of the U.S. Atlantic coast, was still considered vulnerable to power shortages.

No nuclear plants were expected to come on line in 1991, and total nuclear power generation was likely to decline from 1990's 569.7 billion kilowatt-hours, because of scheduled maintenance. Hydroelectric power was expected to continue the recovery began in 1990, returning to levels near those before the droughts in the late 1980s. Coal-fired power plants were likely to pick up most of the need for additional capacity in 1991. However, natural gas was forecast to continue gaining market share from oil, reflecting its price advantage on a Btu basis.

The Clean Air Act of 1990 was expected to favor natural gas over coal, especially high-sulfur coal mined and burned in the eastern half of the U.S. High-sulfur coal was reported to be a cause of acid rain, despite evidence to the contrary from a 10-year study of New York lakes, undertaken as part of previous environmental legislation. In any case, the 1990 law was likely to cause a further deterioration in the ability of utilities to meet peak-load demands.

World Electricity Production In Billions of KWH

Year	Australia	Brazil	Canada	China	France	West Germany	India	Italy	Japan	Poland	Sweden	Spain	South Africa	United Kingdom	United States	USSR
1980	96.3	139.5	377.5		243.3	368.8		185.7	577.5	121.9	93.4		95.0	284.9	2,354	1,295
1981	102.5	142.2	390.9		263.4	367.1		178.9	583.2	115.0	102.8	110.0	97.4	276.7	2,359	1,325
1982	104.9	152.0	387.5	327.7	265.4	365.2	130.0	181.8	581.4	117.6	99.5	113.5	108.2	271.3	2,302	1,367
1983	106.3	162.0	408.4	351.4	281.3	372.0	139.9	180.1	618.1	125.9	108.9	114.7	108.3	275.6	2,368	1,396
1984	112.9	178.5	438.0	377.0	307.2	392.8	156.6	179.5	648.6	135.3	123.3	118.1	121.6	280.4	2,479	1,493
1985	121.7	192.7	459.0	410.7	325.7	406.7	170.2	182.3	672.0	137.7	136.5	125.6	121.5	293.7	2,568	1,544
1986	127.7	201.3	468.6	449.5	343.0	406.4	187.5	189.0	671.8	140.3	138.0	127.7	146.5	298.2	2,599	1,599
1987	133.8	202.3	496.3	497.3	352.6	418.5	201.9	201.0	699.0	145.8	129.6	129.4	150.6	301.9	2,719	1,668
1988[1]	140.4	214.1	503.5	593.5	365.5	422.7	221.1	203.2	753.7	144.3	149.4	135.9	156.7	309.1	2,857	1,705
1989[2]	145.0		512.6	594.6	375.0	440.6	245.1	210.8	760.0	145.5	139.3	141.2	150.0	311.2	2,779	1,722

[1] Preliminary. [2] Estimate. *Source: United Nations* T.222

Installed Capacity, Capability & Peak Load of the U.S. Electric Utility Industry In Millions of Kilowatts

	Installed Generating Capacity at Dec. 31															
		Type of Prime Mover				Type of Ownership										
Year	Total Electric Utility Industry	Hydro	Gas Turbine & Steam	Nuclear Power	Internal Combustion	Investor Owned	Cooperatives	Sub-Total Gov't	Municipal Utilities	Federal	Power Districts, State Projects	Capability at Winter Peak Load	Non-Coincident Winter Peak Load	Margin of Reserve (%)	Total Generation	Peak Load Factor (%)
1980	613.7	76.4	475.3	56.5	5.6	477.1	15.4	121.2	34.6	59.1	27.5	572.2	384.6	23.5	2,293	61.1
1981	635.0	77.2	491.3	60.8	5.6	490.8	18.4	125.7	35.1	61.0	29.5	581.1	391.1	25.2	2,311	61.6
1982	650.1	78.1	503.8	63.0	5.1	499.1	21.5	129.5	35.8	62.5	31.2	596.9	373.3	29.2	2,241	62.1
1983	658.2	79.0	507.1	67.1	5.0	505.5	22.2	130.5	36.6	63.0	30.9	611.6	410.8	25.0	2,310	59.5
1984	672.5	80.6	516.5	70.5	4.8	514.9	24.7	132.9	36.7	63.3	32.8	622.1	436.4	25.3	2,416	59.7
1985	688.7	83.0	520.3	80.4	5.0	530.4	24.6	133.8	37.0	63.7	33.0	636.5	423.7	25.9	2,470	62.0
1986	707.7	85.2	524.1	92.4	5.9	544.2	26.4	137.1	38.6	63.9	34.6	646.7	422.9	24.8	2,487	60.7
1987	718.1	85.9	524.3	101.6	6.2	552.8	26.4	138.9	39.4	64.7	34.9	663.0	448.3	23.4	2,572	60.8
1988	723.9	86.9	526.6	103.4	7.0	557.8	26.4	139.7	40.4	64.8	34.5	676.9	466.5	20.0	2,704	59.5
1989[1]	730.9	87.5	529.1	106.7	7.5	562.1	26.4	142.4	40.7	67.2	34.5	685.2	496.4	22.3	2,781	62.2

[1] Preliminary. [2] New series starting 1980. *Source: Federal Power Commission* T.223

Available Electricity & Energy Sales in the United States In Billions of Kilowatt Hours

	Net Generation								Sales to Ultimate Customers									
	Electric Utility Industry																	
Year	Hydro	Natural Gas	Coal	Petroleum	Nuclear	Total[5]	Other Sources[2]	Total	Total Million $	Total[4]	Residential	Inter-Departmental	Commercial	Industrial	Street & Highway	Other Public Authorities	Railways & Rail roads
1977	221	306	985	358	251	2,124	88	2,212	62,610	1,951	652.3	7.2	469.2	757.2	14.4	46.2	4.2
1978	280	305	976	365	276	2,206	79	2,300	69,853	2,018	679.2	7.1	480.7	782.1	14.8	49.5	4.3
1979	280	329	1,075	304	255	2,247	71	2,318	79,640	2,084	696.0	7.4	494.7	817.6	14.8	49.6	4.3
1980	276	346	1,162	246	251	2,286	68	2,351	95,462	2,126	734.4	6.4	524.1	793.8	14.8	48.3	4.3
1981	261	346	1,203	206	273	2,295	70	2,365	111,016	2,151	730.5	6.2	521.7	819.6	14.7	53.7	4.2
1982	309	305	1,192	147	283	2,241			121,584	2,100	732.7	5.4	517.0	770.4	14.2	55.7	4.3
1983	332	274	1,259	144	294	2,310			129,507	2,158	750.9	5.4	546.3	780.0	14.1	56.7	4.3
1984	321	297	1,342	120	328	2,416			142,281	2,286	780.7	5.8	583.8	836.1	14.1	61.0	4.5
1985	281	292	1,402	100	384	2,470			149,162	2,306	792.9	5.3	605.9	820.3	14.6	62.2	4.7
1986	291	249	1,386	137	414	2,487			152,814	2,355	820.8	5.2	630.3	817.4	14.9	62.0	4.7
1987	250	273	1,464	118	455	2,572			155,712	2,435	846.4	4.5	658.4	843.7	14.4	63.0	4.9
1988	223	253	1,541	149	527	2,704			162,188	2,550	885.1	4.4	695.2	880.9	14.5	64.6	5.1
1989[1]	265	267	1,554	158	529	2,784			163,364	2,560	884.9	4.5	698.5	887.5	14.5	65.1	5.1
1990[3]	278	280	1,560	105	550	2,900			170,000	2,650	900	4.6	720	900	14.6	70.0	5.2

[1] Preliminary. [2] Includes generation of industrial and railway electric plants. [3] Estimate. [4] Also includes interdepartmental (averages about 600 million kwh). [5] Includes internal combustion. *Sources: Federal Power Commission; Edison Electric Institute* T.224

Electric Power Production by Electric Utilities in the U.S. In Billions of Kilowatt Hours

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct	Nov.	Dec.	Total
1977	196.4	162.7	169.1	156.9	169.3	180.8	198.9	196.1	176.2	166.4	167.1	184.2	2,124
1978	197.3	173.7	173.2	159.7	175.2	187.4	202.6	205.6	185.6	175.6	176.3	191.7	2,206
1979	209.7	186.3	182.8	170.0	178.1	186.7	202.3	204.9	180.8	179.7	177.5	188.7	2,247
1980	200.0	188.7	187.5	168.7	175.7	189.4	216.8	215.4	191.5	178.6	178.6	195.6	2,286
1981	206.5	179.6	185.6	172.5	177.8	202.7	220.4	210.4	186.8	181.4	175.6	195.6	2,295
1982	209.4	180.3	187.7	172.6	177.1	186.1	210.6	205.7	180.7	173.0	173.4	184.7	2,241
1983	195.6	172.5	182.5	170.4	174.4	191.0	220.2	230.0	195.6	182.9	182.9	212.3	2,310
1984	216.6	189.6	200.1	181.1	192.2	209.6	221.2	229.3	195.2	190.9	190.4	200.0	2,416
1985	227.9	198.2	195.0	184.9	196.8	205.4	226.7	226.1	202.5	194.8	192.4	219.3	2,470
1986	217.5	192.3	196.8	186.1	197.3	215.0	242.7	225.2	206.7	197.8	196.4	213.6	2,487
1987	222.7	194.0	201.8	189.5	206.1	225.6	247.9	247.6	213.0	203.0	200.3	220.5	2,572
1988	237.6	216.7	213.8	195.8	208.2	232.5	257.2	267.4	220.0	210.4	209.4	232.6	2,704
1989[1]	231.3	219.1	226.4	207.7	219.8	235.4	256.7	258.3	226.9	219.1	219.0	258.6	2,781
1990[1]	237.0	212.7	225.7	210.8	222.6	248.9	266.2	268.2	237.7	224.7			

[1] Preliminary. *Source: Federal Power Commission* T.225

Use of Fuels for Electric Generation in the United States

	Consumption of Fuel									
Year	Coal (Thousand Short Tons)	Fuel Oil (Thousand Barrels)[2]	Gas (Million Cubic Feet)	Total Fuel in Coal Equivalent (Thousand Short Tons)	Net Generation by Fuels[3] (Million Kw. Hr.)	Lbs. of Coal Per Kw. Hr. (Pounds)	Cost of Fossil-Fuel at Elec. Util. ¢ Mil. BTU	Average Cost of Fuel Per Kw. Hr. (¢)	Heat Rate BTU Per Kw. Hr.	Cost Per Million BTU Consumed (¢)
1977	477,215	623,656	3,190,571	798,425	1,648,775	.969	129.7	1.38	10,449	131.8
1978	481,624	635,839	3,188,370	811,814	1,646,163	.986	141.1	1.53	10,495	145.3
1979	527,051	523,297	3,490,523	837,371	1,708,029	.981	163.9	1.62	10,470	155.4
1980	569,274	420,214	3,681,595	916,952	1,753,749	.980	192.8	2.07	10,489	197.0
1981	596,797	351,111	3,640,154	922,133	1,755,401	.992	225.6	2.42	10,506	230.2
1982	593,666	249,771	3,225,518	858,869	1,644,062	.996	224.9	2.46	10,517	234.0
1983	625,211	245,497	2,910,767	861,621	1,678,021	.993	220.6	2.40	10,539	227.1
1984	664,399	204,479	3,111,342	909,156	1,758,882	.990	219.1	2.41	10,385	232.0
1985	693,841	173,414	3,044,083	926,793	1,794,276	.990	209.4	2.27	10,429	217.7
1986	685,056	230,482	2,602,370	907,720	1,770,925	.989	175.0	1.92	10,423	184.5
1987	717,894	199,378	2,844,051	944,420	1,854,895	.981	170.6	1.84	10,354	177.7
1988	758,372	248,096	2,635,613	984,969	1,942,353	.984	164.3	1.76	10,328	170.7
1989[1]	766,888	267,451	2,787,012	1,002,474	1,975,050	.987	167.5	1.79	10,312	174.0
1990[4]	770,000	275,000	2,850,000				168.0			

[1] Preliminary. [2] 42-gallon barrels. [3] Excludes wood & waste fuels. [4] Estimate. *Source: Federal Power Commission* T.226

Fertilizer

The three main fertilizer chemicals used in the U.S. are nitrogen, derived from ammonia; phosphorous, made from phosphate rock; and potassium, made from potassium chloride, commonly known as potash. Total U.S. fertilizer use for the 1989/90 season was nearly 20 million short tons. Application rates were slightly higher for corn, soybeans, and cotton, but were lower for wheat.

U.S. ammonia production was about 13.8 million tons in 1990, about 80 percent of which went to domestic fertilizer use. The world's leading ammonia producers were the Soviet Union, with 22 percent of world capacity, China with 15 percent, and the U.S. with about 10 percent. Apparent domestic ammonia use was estimated at just over 16 million tons in 1990.

The Persian Gulf situation resulted in sharply higher prices for ammonia nitrogen late in the year, as it led to a 2 percent drop in expected world production. Ammonia prices (f.o.b. U.S. Gulf Coast) rose from $84/ton before Iraq's invasion of Kuwait to $116 by October and were expected to top $130 by the end of 1990. A consolidation phase continued in the U.S. ammonia industry, and some plants were forced to close because U.S. prices of natural gas, a key component of ammonia production, rose above prices in the USSR and the Middle East.

U.S. marketable phosphate rock output was about 46 million tonnes in 1990, which was below initial plans, due to softer than expected demand. The U.S. was the leading producer with about 30 percent of world output, followed by the USSR and Morocco. Domestic consumption was expected to be nearly 43.5 million tonnes in 1990, a slight increase over the year-earlier level. Although shipments dropped from 1989 levels, the U.S. was again a large exporter of phosphate rock in 1990. Higher costs, due to lower grades of ore and environmental requirements, were expected to make U.S. phosphate producers less competitive, however, and it was possible that imports would be necessary to meet domestic needs after the year 2000. The average value of marketable rock was $22.45/tonne in 1990, above 1989's average of $21.34.

Marketable U.S. production of potash was about 1.6 million tonnes in 1990, above the previous year's level. Most of the U.S. production was centered in southwestern New Mexico. The USSR, Canada, and Europe accounted for about 85 percent of world potash output, while the U.S. produced less than 5 percent of the world total. Apparent domestic consumption was about 5.1 million tonnes, resulting in a 68 percent reliance on imports. About 95 percent of U.S. potash sales were to the fertilizer industry. Canada was the leading potash supplier to the U.S. in 1990.

World Production of Ammonia In Millions of Short Tons of Contained Nitrogen

Year	Bulgaria	Canada	China	France	East Germany	West Germany	India	Italy	Japan	Mexico	Netherlands	Poland	Romania	United Kingdom	United States	USSR	Total
1983	1.2	3.2	15.2	2.2	1.3	1.9	3.9	1.2	1.7	2.1	1.9	1.6	3.0	1.9	11.3	18.6	88.7
1984	1.3	3.9	15.4	2.6	1.3	2.2	4.4	1.3	1.8	2.0	2.5	1.6	3.2	2.0	13.4	19.5	96.9
1985	1.3	3.3	16.5	2.2	1.3	2.1	4.7	1.3	1.8	2.0	2.8	2.0	3.2	1.9	14.2	20.2	100.3
1986	1.2	3.2	17.1	2.2	1.3	1.7	5.4	1.7	1.7	1.8	3.0	2.3	3.4	1.5	11.9	21.6	100.9
1987	1.2	3.2	16.0	2.2	1.3	2.1	5.8	1.6	1.7	1.9	3.1	2.4	3.1	1.6	13.2	22.1	103.9
1988	1.2	3.6	17.9	2.0	1.3	1.9	6.8	1.7	1.7	2.3	3.3	2.4	3.1	1.1	13.8	22.2	108.4
1989[1]	1.2	3.7	18.7	1.6	1.3	1.7	7.4	1.6	1.7	2.3	3.3	2.4	2.9	1.1	13.8	22.2	109.7
1990[2]		3.4		1.7		1.5	7.6	1.4	1.7	2.4	3.2			1.1	13.8		107.1

[1] Preliminary. [2] Estimate. *Source: Bureau of Mines*

T.227

U.S. Salient Statistics of Nitrogen[1] (Ammonia) In Thousands of Short Tons

		Production[1] (Fixed)					Nitrogen[3] Compounds		Stocks Dec. 31			Average Price ($ Per Short Ton)			
												Urea			
Year	Net Import Reliance as a % of Appar. Con.	Fertilizer	Non-fertilizer	Total	Imports (Fixed) [2]	Exports	Produced	Consumption	Ammonia	Fixed Nitrogen Compounds	Ammonia Consuption (Apparent)	F.O.B. Gulf[2] Coast	Deliv. Corn Belt	Ammonium Nitrate: Deliv. Corn Belt	Ammonia F.O.B. Gulf Coast
1982	8				1,737	610			1,970		14,145	122–125	135–145	125–145	120
1983	18				2,169	298			1,422		13,719	135–140	160–167	135–145	175
1984	13	12,397	1,332	13,729	2,699	438	9,801	9,858	1,704		15,708	147–149	168–200	135–150	147
1985	8	13,024	1,212	14,236	2,306	1,010	9,287	9,339	1,795		15,441	82–95	110–137	112–133	108
1986	13	10,852	1,057	11,909	2,048	531	8,100	8,147	1,507		13,714	75–78	90–110	100–120	75
1987	13	12,019	1,213	13,232	2,357	848	9,335	9,386	1,053		15,193	114–117	125–135	100–120	90
1988	15	12,566	1,261	13,827	3,032	642	10,228	10,287	1,020	777	16,250	139–145	150–155	128–135	128
1989[4]	18	12,503	1,327	13,830	3,154	381	10,381	10,441	936	868	16,687	98–105	110–120	105–115	87
1990[5]	14			13,800	2,900	550					16,000				135

[1] Anhydrous ammonia, synthetic. [2] For consumption. [3] Major downstream nitrogen compounds. [4] Preliminary. [5] Estimate. *Source: Bureau of Mines*

T.228

World Production of Phosphate Rock, Basic Slag & Guano In Ths. of Metric Tons (Gross Weight)

Year	Algeria	Brazil	China	Christmas Island	Israel	Jordan	Morocco	Nauru Island	Senegal	South Africa	Syria	Togo	Tunisia	United States	USSR	World Total
1982	947	2,732	11,720	1,328	2,148	4,390	17,754	1,359	1,182	3,161	1,455	2,800	4,196	37,414	31,300	127,382
1983	893	3,208	12,500	1,094	2,969	4,749	20,106	1,684	1,521	2,887	1,229	2,081	5,924	42,573	33,100	140,889
1984	1,000	3,855	11,800	1,259	3,312	6,263	21,245	1,358	1,912	2,585	1,514	2,696	5,346	49,197	33,300	151,568
1985	1,207	4,214	6,970	1,187	4,076	6,067	20,737	1,508	1,814	2,433	1,270	2,452	4,530	50,835	33,750	148,849
1986	1,203	4,509	6,700	880	3,673	6,249	21,178	1,494	1,850	2,920	1,606	2,314	5,951	38,710	33,900	138,869
1987	1,073	4,777	9,000	842	3,798	6,800	20,000	1,376	1,874	2,623	1,986	2,644	6,390	40,954	34,100	144,231
1988[1]	1,332	4,672	15,000	—	3,479	6,000	25,015	1,540	2,326	2,850	2,342	3,464	6,103	45,389	34,400	160,375
1989[2]	1,223	3,580	15,500	—	3,922	6,675	17,988	1,500	2,273	2,963	2,250	3,355	6,621	49,817	39,000	163,415
1990[2]			18,000		4,000	7,000	22,000		2,300	3,000		3,400	6,650	46,000	39,500	166,350

[1] Preliminary. [2] Estimate. *Source: Bureau of Mines* T.229

U.S. Salient Statistics of Phosphate Rock In Thousands of Metric Tons

Year	Mine Production	Marketable Production	Value Mil. $	Imports for Consumption	Exports	Apparent Consumption	Stocks, Dec. 31 (Producer)	Price—$ Avg. Per Metric Ton (f.o.b. Mine)	Avg. Price of Fla. & No. Car. $ Tonne—F.O.B. Mine (−60% to +74) Domestic	Export	Average
1982	104,135	37,414	950	31	9,842	28,760	18,287	25.40	28.78	28.92	25.93
1983	125,691	42,573	1,021	9	12,010	34,838	14,500	23.97	22.64	25.70	23.48
1984	163,012	49,197	1,182	9	11,528	41,758	11,897	23.99	22.67	26.28	23.48
1985	175,227	50,835	1,236	34	9,136	37,532	15,534	24.31	23.08	26.72	23.81
1986	135,683	40,320	897	528	7,848	34,456	13,277	22.25	21.64	25.02	22.31
1987	148,426	40,954	793	464	8,454	35,683	10,884	19.37	18.93	22.87	19.77
1988	162,299	45,389	888	676	8,092	41,022	9,323	19.56	18.29	25.24	19.58
1989[1]	170,268	49,817	1,084	705	7,842	42,143	11,027	21.76	20.65	28.67	22.07
1990[2]		46,000		450	7,000	43,450	9,000	23.00			

[1] Preliminary. [2] Estimate. *Source: Bureau of Mines* T.230

U.S. Salient Statistics of Potash In Thousands of Metric Tons (K_2O Equivalent)

Year	Net Import as % of Consumption	Production	Sales by Producers	Value Mil. $	Imports for Consumption	Exports	Apparent Consumption	Producer Stocks Dec. 31	$ per ton Avg. Value Per Ton of Product—$	$ per ton Avg. Value of K_2O Equiv.	Average Price[2] $ Per Tonne
1982	65	1,784	1,784	265.6	3,858	519	5,123	520	78.42	148.87	109
1983	75	1,429	1,513	220.8	4,440	300	5,653	391	74.85	145.97	100
1984	74	1,564	1,639	241.8	4,829	446	6,022	312	75.95	147.55	109
1985	76	1,296	1,266	178.4	4,593	513	5,346	336	71.22	140.89	96
1986	75	1,202	1,147	144.9	4,212	547	4,843	378	63.24	126.28	82
1987	75	1,262	1,485	197.7	4,073	470	5,088	155	67.98	131.73	93
1988	71	1,521	1,427	240.3	4,217	380	5,264	248	85.75	168.37	132
1989[1]	65	1,595	1,536	271.5	3,410	446	4,500	307	90.28	176.74	137
1990[3]	68	1,640			4,000	450	5,150	347			130

[1] Preliminary. [2] Unit of K_2O, standard 60% muriate f.o.b. mine. [3] Estimate. *Source: Bureau of Mines* T.232

World Production of Marketable Potash In Thousands of Metric Tons (K_2O Equivalent)

Year	Canada (sales)	Chile	China	Brazil	France	Germany East	Germany West	Israel	Italy	Jordan	Spain	USSR	United States	United Kingdom	World Total
1982	5,309	22	26	—	1,704	3,434	2,056	1,004	146	9	692	8,079	1,784	245	24,510
1983	6,938	21	29	—	1,536	3,431	2,419	1,000	184	172	657	9,294	1,429	308	27,418
1984	7,527	18	40	—	1,739	3,465	2,645	1,100	163	295	677	9,776	1,564	325	29,334
1985	6,661	21	40	—	1,750	3,465	2,583	1,200	205	561	659	10,367	1,296	343	29,151
1986	6,753	20	40	18	1,617	3,485	2,161	1,255	158	660	795	10,228	1,202	396	28,788
1987	7,668	23	40	62	1,539	3,510	2,199	1,253	178	734	741	10,888	1,262	429	30,526
1988[1]	8,311	25	40	56	1,502	3,510	2,390	1,244	197	785	766	11,301	1,521	460	32,108
1989[2]	7,458	25	60	109	1,200	3,200	2,240	1,271	154	790	745	10,500	1,595	465	29,789
1990[2]	7,200	25	60	60	1,150	2,600	2,200	1,310	200	800	710	9,700	1,640	470	28,125

[1] Preliminary. [2] Estimate. *Source: U.S. Bureau of Mines* T.231

Flaxseed and Linseed Oil

World flaxseed production in 1990/91 was estimated by USDA at 2.3 million tonnes, 21 percent more than a year earlier. Canada had excellent growing conditions and produced 900,000 tonnes, versus 500,000 tonnes the year before. Planted acreage in Canada rose by 20 percent to almost 1.8 million, while average yield increased by over 50 percent. Argentina, the second largest producer, had a crop of 520,000 tonnes, the same as a year earlier. In Argentina, acreage was higher, but yields declined. India's output of 400,000 tonnes was the same as the previous season, while the Soviet Union's crop of 170,000 tonnes was down by over 25 percent. In the U.S., flaxseed remains a minor crop. The crop was estimated to be 80,000 tonnes, above 30,000 the previous season, as growing conditions in the Midwest were excellent.

Demand for flaxseed has trended lower in recent years as other fibers have replaced flax. Latex or water-based paints have reduced the need for linseed oil.

The world flaxseed crush in 1990/91 was estimated at 1.7 million tonnes, up nearly 2 percent from the previous season. Argentina is a major processor of flaxseed with a large oilseed crushing capacity. Canada is primarily an exporter of flaxseed. Some Canadian flaxseed is shipped to the U.S., where it is crushed and exported as linseed oil. Trade in flaxseed was expected to expand in 1990/91. Global exports were forecast at 640,000 tonnes, up 12 percent. Canada was due to ship about 600,000 tonnes. Germany is a large importer. World ending stocks of flaxseed were forecast to increase substantially to 300,000 tonnes from 90,000 the previous season.

World linseed oil production was estimated at 570,000 tonnes, near the year-earlier level. Global consumption of linseed oil was projected to rise by almost 2 percent to 560,000 tonnes. Linseed oil is used primarily as a drying agent in paints and varnishes, and small amounts are used in food.

U.S. Government Program

The 1990 Farm Bill established a loan rate for flaxseed of 8.9 cents per pound, subject to a 2 percent loan origination fee. A marketing loan program was also established. Under the marketing loan, crop production loans can be repaid at the lesser of the loan rate or the prevailing world market price for that oilseed.

Futures Market

Flaxseed futures are traded on the Winnipeg Commodity Exchange (WCE).

World Production of Flaxseed In Thousands of Metric Tons

Crop Year	Argentina	Australia	Czechoslovakia	Canada	Bangladesh	Egypt	France	Hungary	India	Mexico	Poland	Romania	Turkey	Uruguay	United States	USSR	World Total
1982–3	765	3	15	752	8	38	31	11	375	1	20	43	2	6	261	150	2,502
1983–4	660	4	15	444	8	16	22	11	444	4	19	23	2	9	175	259	2,139
1984–5	626	6	15	694	8	20	29	9	389	10	18	35	2	7	178	248	2,316
1985–6	460	12	15	902	8	22	34	7	380	4	18	36	5	6	211	201	2,350
1986–7	622	9	15	1,026	8	19	24	6	317	3	15	32	4	3	293	233	2,658
1987–8	535	7	15	729	40	19	22	7	372	3	11	33	4	1	189	228	2,269
1988–9[1]	413	5	15	373	36	19	31	7	400	3	15	30	4	3	41	220	1,660
1989–90[2]	520			498					400	3					34	227	1,910
1990–1[2]	520			876					400						149	165	2,320

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.233

U.S. Supply and Distribution of Flaxseed In Thousands of Bushels

Year Beginning June	Supply							Distribution				
	Planted — 1,000 Acres —	Harvested — 1,000 Acres —	Yield Bush.	Total Stocks	Imports	Production	Total Supply	Seed	Crushing	Exports	Other[2]	Total Distribution
1981–2	605	577	12.6	2,733	3,502	7,289	13,524	691	11,231	11	−359	11,574
1982–3	780	735	14.0	1,950	1,921	10,278	14,149	486	8,722	638	1,091	10,937
1983–4	605	580	11.9	3,212	4,756	6,903	14,871	438	12,733	52	−68	13,155
1984–5	555	538	13.1	1,716	3,796	7,022	12,534	511	9,935	238	201	10,885
1985–6	620	584	14.2	1,649	2,927	8,293	12,869	517	10,313	250	160	11,240
1986–7	720	683	16.9	1,629	2,229	11,538	15,396	362	10,000	1,448	285	12,095
1987–8	470	463	16.1	3,301	2,913	7,444	13,658	223	10,800	156	154	11,333
1988–9	275	226	7.1	2,325	6,732	1,615	10,672	170	8,500	750	55	9,365
1989–90[1]	210	177	7.7	1,307	6,726	1,355	9,388	194	8,000	950	0	9,144
1990–1[3]	240	232	14.2	244	6,408	3,300	9,952	202	8,000	750	0	8,952

[1] Preliminary. [2] Other disappearance represents cleaning loss, waste, and residual. [3] Forecasts. *Source: Agricultural Statistics Board, U.S.D.A.* T.235

U.S. Production of Flaxseed, By States In Thousands of Bushels

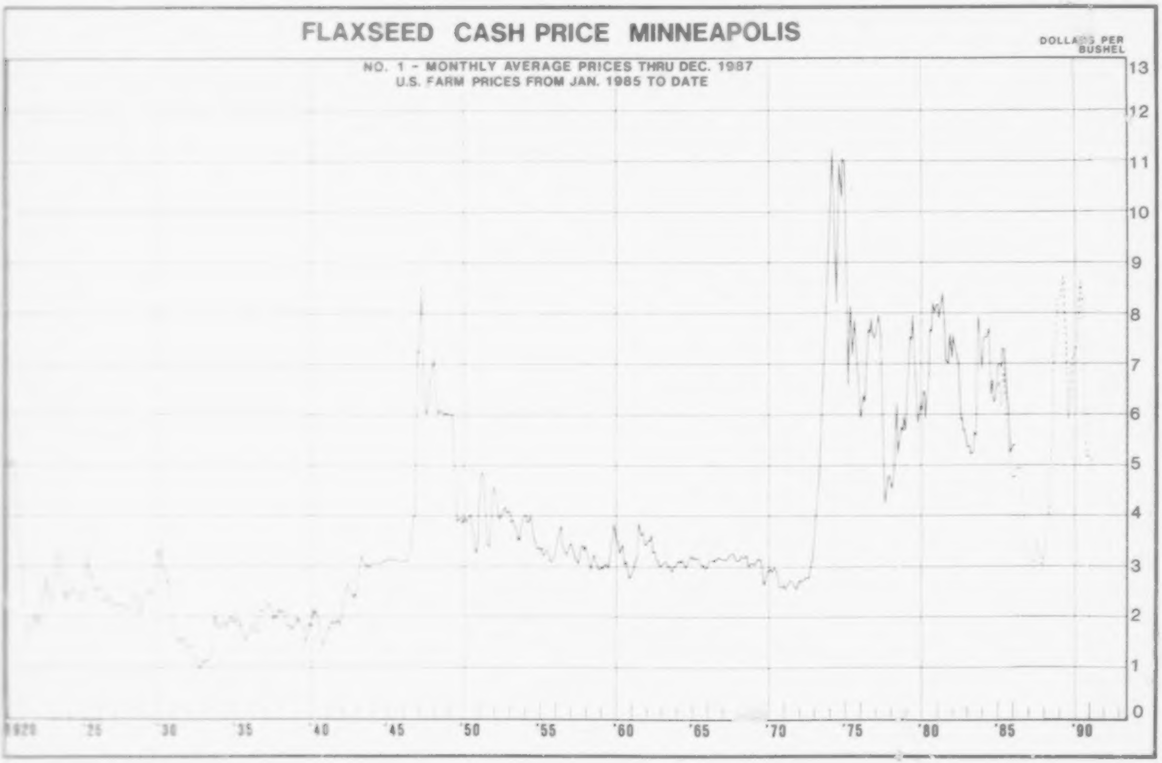
Crop Year	Minn-esota	North Dakota	South Dakota	Total	Crop Year	Minn-esota	North Dakota	South Dakota	Total
1982	1,650	5,873	2,755	10,278	1986	544	[illegible]	1,456	11,538
1983	938	4,600	1,365	6,903	1987[1]	224	6,518	702	7,444
1984	653	4,875	1,494	7,022	1988[1]	110	1,295	210	1,615
1985	950	6,008	1,335	8,293	1989[1]	95	980	280	3,450

[1] Preliminary. *Source: Agricultural Statistics Board, U.S.D.A.* T.234

Average Price Received by Farmers for Flaxseed in the U.S. In Cents Per Bushel

Year	July	Aug	Sept	Oct	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average[1]
1980–1	655	702	717	710	723	759	754	748	725	735	765	747	720
1981–2	723	708	644	621	664	684	690	691	680	669	660	665	667
1982–3	625	535	537	511	495	468	486	470	460	454	469	492	517
1983–4	496	594	714	700	692	655	686	701	710	708	720	691	684
1984–5	625	607	572	567	595	605	659	664	618	667	694	654	609
1985–6	610	572	539	501	480	479	477	494	495	488	487	495	505
1986–7	439	380	369	346	339	341	318	313	304	315	335	344	347
1987–8	347	333	315	307	303	320	345	380	395	411	419	528	339
1988–9	629	719	767	785	809	834	834	870	809	778	754	679	756
1989–90	590	649	707	709	715	714	728	768	809	860	823	830	724

[1] Season average includes an allowance for unredeemed loans. *Source: Agricultural Statistics Board, U.S.D.A.* T.236



FLAXSEED AND LINSEED OIL

Supply and Distribution of Linseed Oil in the U.S. & World Production & Price In Millions of Pounds

Year Beginning June	Supply			Exports & Shipments	Domestic Disappearance					World Production[3] in 1,000 tonnes						Price Rotterdam Ex-Tank $ Tonne
					Drying Oil Products[4]											
	Stocks June 1	Production	Total		Paint & Varnish	Linoleum & Oilcloth	Resins & Plastics	Other Inedible	Total	Total World	Argentina	India	Japan	West Germany	U.S.	
1983–4	35	265	300	51	56.5		27.7		201	670	206	128	38	66	120	556
1984–5	48	194	242	15	113.5		26.3		194	640	170	146	35	87	88	639
1985–6	33	205	238	15	131.0		29.7		184	600	112	110	36	124	93	475
1986–7	39	201	240	6	187.6				183	640	171	91	32	124	91	319
1987–8[1]	51	217	268	10	85.5		31.0		217	620	160	109	34	79	98	441
1988–9[2]	41	170	211	13	101.6		23.1		150	520	150	116	35	48	72	716
1989–90[2]	48	165	213	12					164	560	160	116				756
1990–1[2]	37	160	197	10					147	560	145	116				601

[1] Preliminary. [2] Estimate. [3] Oil production calculated from assumed extraction rates. [4] For crop year beginning Oct. *Source: Economic Research Service, U.S.D.A.*

T.239

Factory Shipments of Paints, Varnish and Lacquer in the U.S. In Millions of Dollars

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	491.3	518.8	656.6	676.8	728.5	808.6	692.1	754.3	713.6	656.9	580.1	505.9	7,783
1984	624.5	672.4	760.7	754.3	839.2	839.9	785.1	833.0	744.4	765.3	633.0	566.5	8,818
1985	630.5	621.2	754.3	865.3	930.1	880.5	862.2	864.3	805.9	820.4	673.6	571.0	9,279
1986	698.6	681.1	760.0	903.9	913.8	891.0	862.7	856.3	841.5	863.4	660.1	614.3	9,547
1987	696.7	754.6	849.5	903.2	916.0	933.0	906.6	890.8	879.6	895.4	751.7	681.3	10,168
1988[1]	751.5	822.3	958.0	970.1	1,034.0	1,067.0	937.5	1,000.0	932.6	908.1	819.7	751.5	10,783
1989[1]	820.5	841.3	952.6	985.7	1,072.7	1,091.5	965.9	1,114.4	1019.7	995.9	914.3	755.5	11,321
1990[1]	853.2	881.1	1,020.4	1,035.1	1,076.3	1,077.2	1,032.7	1,084.3	950.6				

[1] Preliminary. *Source: Bureau of the Census*

T.246

Wholesale Price of Raw Linseed Oil at Minneapolis in Tank Cars In Cents Per Pound

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
1983–4	22.8	25.5	31.6	34.0	31.5	32.0	32.0	32.0	31.8	32.0	33.0	34.5	31.1
1984–5	33.4	38.0	31.0	28.8	28.5	30.0	31.2	32.0	N.A.	N.A.	N.A.	N.A.	31.6
1985–6	34.6	33.3	33.0	30.0	30.0	27.6	30.0	30.0	30.0	30.0	30.0	29.4	30.7
1986–7	29.0	29.0	29.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	26.0
1987–8	25.00	25.00	25.00	22.75	24.25	25.00	25.00	25.00	25.00	24.75	24.75	28.20	24.98
1988–9	35.00	37.00	41.50	42.00	42.00	41.50	41.00	41.00	41.40	42.00	42.00	39.75	40.51
1989–90	39.00	39.00	39.50	40.00	40.00	40.00	40.00	40.00	41.60	42.00	42.00	43.00	40.51
1990–1	44.00	40.40	39.75	36.80	36.00								

Source: Department of Agriculture

T.240

U.S. Stocks of Linseed Oil (Crude & Refined) at Factories & Warehouses In Millions of Pounds

Year	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1	Jan. 1	Feb. 1	Mar. 1	April 1	May 1	June 1
1983–4	54.7	46.5	41.7	50.4	46.0	34.9	34.1	38.0	40.3	41.5	55.2	47.6
1984–5	50.7	40.8	24.9	48.3	41.3	36.1	39.3	38.3	34.1	30.1	35.1	33.4
1985–6	32.7	36.9	25.4	47.0	62.3	55.2	60.6	62.7	64.6	66.0	56.1	40.1
1986–7	46.0	45.3	40.4	40.0	50.3	68.0	60.0	68.0	60.0	64.6	55.0	51.1
1987–8	52.2	45.9	40.2	52.1	54.3	50.4	50.8	56.0	39.0	35.5	35.6	40.8
1988–9	35.6	36.0	44.8	24.4	33.5	36.6	46.8	54.6	47.6	49.1	54.6	47.5
1989–90[1]	48.4	43.8	23.2	21.5	23.9	30.3	29.9	39.5	36.7	39.1	38.3	36.8
1990–1[1]	28.3	21.8	17.1	41.8	41.4	47.5	61.7					

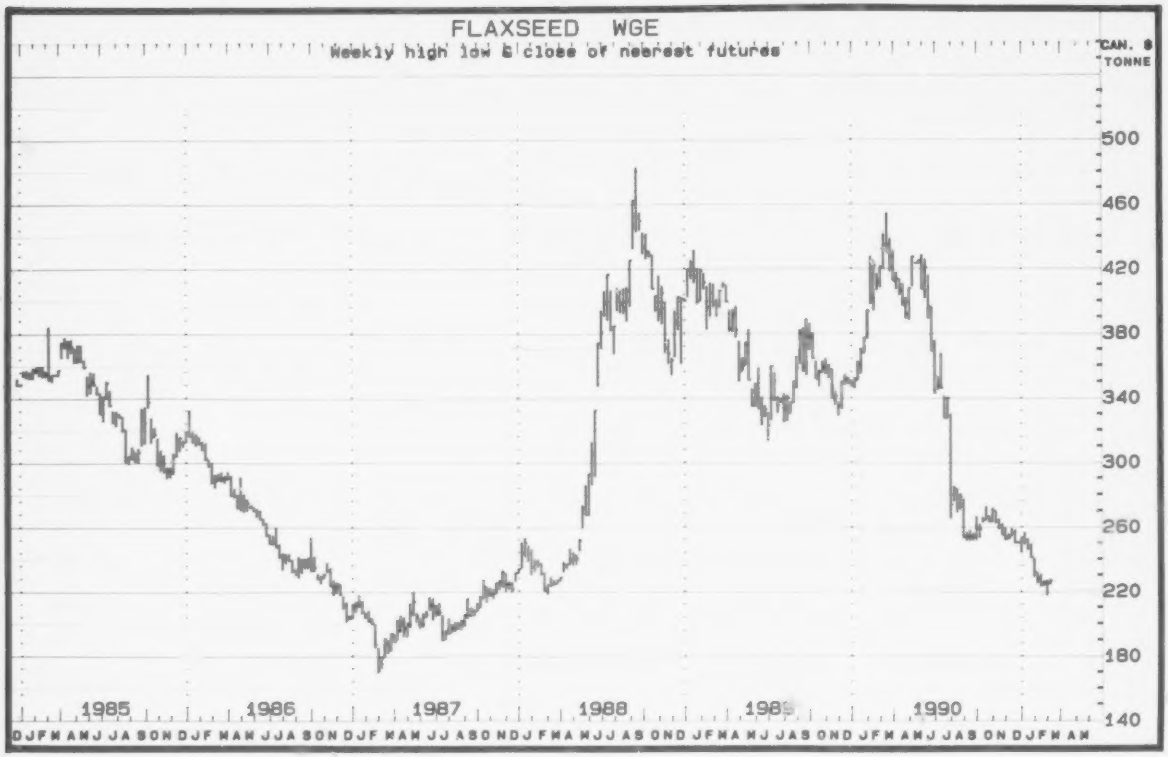
[1] Preliminary. *Source: Bureau of the Census*

T.245

United States Linseed Oil Consumption In Inedible Products In Millions of Pounds

Crop Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1988–89	7.4	10.7	9.9	9.7	11.1	8.3	13.4	13.2	12.3	14.2	20.0	12.2	142.4
1989–90[1]	12.2	13.6	14.5	8.7	8.7	7.5	10.3	8.6	12.8	9.7	9.6	10.0	126.2
1990–1[1]	9.5	10.2	6.8	8.3	6.3	4.7							

Source: Bureau of the Census



High, Low & Closing Prices of May Flaxseed Futures in Winnipeg In Canadian Dollars per Tonne

Year of Delivery		Year Prior to Delivery							Delivery Year					Life of Delivery Range
		June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1988	High	237.6	235.0	218.8	230.2	244.2	246.0	242.5	260.0	244.8	233.8	245.8	285.5	285.5
	Low	231.0	214.0	214.0	217.6	227.3	228.8	231.0	236.0	224.8	223.8	231.9	236.5	214.0
	Close	234.0	217.0	218.0	228.0	230.8	242.5	239.6	241.0	226.1	230.0	241.8	275.0	—
1989	High	—	417.0	431.0	490.0	454.5	427.5	405.5	426.0	411.7	419.2	396.0	381.0	490.0
	Low	—	406.0	410.0	435.0	403.0	371.0	366.5	392.5	381.0	394.0	350.0	334.5	334.5
	Close	—	406.0	431.0	450.0	419.0	371.5	405.0	411.7	404.0	395.5	355.5	339.5	—
1990	High	353.5	362.0	360.0	388.0	382.0	369.5	359.5	379.2	409.0	426.4	417.0	428.0	428.0
	Low	335.3	339.9	341.0	369.9	352.5	344.1	346.8	347.3	374.0	394.8	388.0	389.0	335.3
	Close	346.5	339.9	360.0	378.0	362.1	349.5	350.5	379.2	396.8	407.5	389.0	428.0	—
1991	High	322.5	332.0	305.0	282.0	294.5	287.5	275.5	261.5					
	Low	320.0	300.0	278.5	272.5	275.0	271.1	258.5	235.8					
	Close	322.5	300.0	278.5	277.7	285.0	272.7	258.5	238.3					

Source: Winnipeg Commodity Exchange

T.243

Average Open Interest of Flaxseed Futures in Winnipeg In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1986	4,960	5,417	4,631	6,212	6,244	6,440	5,403	6,150	6,910	4,986	4,860	4,662
1987	4,356	4,284	4,034	5,665	6,938	6,932	6,348	6,953	7,901	5,880	5,705	5,210
1988	5,838	6,341	5,583	6,189	6,089	7,219	5,964	7,018	7,791	8,777	10,662	7,621
1989	7,864	7,875	5,422	6,038	6,479	8,297	8,609	9,234	8,191	5,120	4,613	3,349
1990	3,812	5,165	5,701	5,790	4,839	4,985	4,950	4,908	4,651	4,477	5,079	4,502
1991	4,033											

Source: Winnipeg Commodity Exchange

T.244

Gas

Iraq's August 2, 1990, invasion of Kuwait did not boost the natural gas market to the extent that it did petroleum products. Abundant gas supplies, coupled with a warm autumn and a softening U.S. economy, kept demand in check. According to the American Gas Association, the short-term substitution potential of natural gas for fuel oil is about 130,000 bpd of distillate and residual fuel oil.

Total U.S. natural gas consumption was forecast by the Department of Energy at 18.7 trillion cubic feet (tcf), down about 1 percent from 1989. Residential use fell by 8 percent to 4.38 tcf, while commercial demand fell to 4.38 tcf from 4.78 in 1989. The peak demand months of January through March 1990 were 14 percent warmer than normal, accounting for the bulk of the decline. Industrial use increased modestly to 6.97 tcf, despite indications that the U.S. economy had entered a recession during fourth-quarter 1990.

Natural gas consumption at electric utilities was expected to rise by 2.2 percent in 1990 to 6.97 tcf. Gas was likely to continue gaining market share from oil because of its lower price per Btu and the 1990 Clean Air Act, which restricts use of high-sulfur fuel oil, as well as coal.

During the early stages of the Persian Gulf crisis, some utilities switched to gas to conserve oil supplies for the winter, in case a cold winter forced the diversion of gas to the residential market; others built storage inventories. But for the year as a whole, the increased use of gas in the fourth quarter merely offset earlier losses in market share to hydroelectric generators. Hydropower output had been reduced in 1988 and 1989 by drought.

Futures Market

The New York Mercantile Exchange (NYMEX) began trading natural gas futures on April 3, 1990.

World Natural Gas Production (Marketed Production[3]) In Thousands of Terajoule[4]

Year	Argentina	Canada	China	France	Indonesia	West Germany	Iran	Italy	Mexico	Netherlands	Poland	Romania	United Kingdom	United States	USSR	Venezuela	Australia
1978	256	2,856	535	307	353	720	668	524	701	3,048	244	1,475	1,458	18,846	12,967	528	274
1979	303	3,041	566	303	482	729	700	581	832	3,100	224	1,409	1,470	19,415	14,160	601	303
1980	327	2,790	558	289	607	632	279	476	1,036	3,012	193	1,455	1,379	19,256	15,168	643	351
1981	340	2,748	496	277	653	673	247	533	1,033	2,975	187	1,532	1,374	19,057	16,215	647	406
1982	393	2,825	464	257	646	580	326	583	1,638	2,533	167	1,549	1,483	17,655	17,414	682	432
1983	457	2,740	475	297	773	635	326	495	1,452	2,691	193	1,537	1,527	15,986	18,638	668	443
1984	478	2,972	478	247	940	617	511	525	1,112	2,717	190	1,526	1,494	17,341	20,469	741	470
1985	509	3,189	502	217	937	584	557	539	1,068	2,839	200	1,522	1,665	16,365	22,149	727	502
1986	553	2,976	547	165	1,120	465	588	541	1,005	2,551	183	1,510	1,747	15,974	23,698	805	550
1987	657	3,254	541	206	1,080	582	622	618	1,011	2,350	180	1,551	1,681	16,488	25,295	799	594
1988[1]	775	3,757	556	174	1,262	544	589	627	1,006	2,079	179	1,521	1,617	16,583	26,212	809	599
1989[2]	625	3,981	586	165	1,400	537		658	1,100	2,270	169		1,700	16,957	25,843	798	625

[1] Preliminary. [2] Estimate. [3] Comprises all gas collected & utilized as fuel or as a chemical industry raw material, including gas used in oilfields and/or gasfields as a fuel by producers. [4] Terajoule = 10^{12} Joule = approx. 10^9 BTU. *Source: United Nations* T.247

United States Recoverable Reserves and Deliveries of Natural Gas In Billions of Cubic Feet

Year	Recoverable Reserves of Natural Gas Dec. 31[3]	Deliveries									Heating Value BTU per Cubic Foot
		Residential	Commercial	Lease & Plant Fuel	Carbon Black	Petroleum Refineries	Used as Pipeline Fuel	Industrial	Total Deliveries	Electric Utility Plants[2]	
1978	200,302	4,903	2,601	1,648			530	6,757	17,449	3,188	
1979	200,987	4,965	2,786	1,499			601	6,899	18,141	3,491	
1980	199,021	4,752	2,611	1,026			635	7,172	18,216	3,682	1,026
1981	201,730	4,546	2,520	928			642	7,128	17,834	3,640	1,027
1982	201,512	4,633	2,606	1,109			596	5,831	16,295	3,226	1,028
1983	200,247	4,381	2,433	978			490	5,643	15,367	2,911	1,031
1984	197,463	4,555	2,524	1,077			529	6,154	16,345	3,111	1,031
1985	193,369	4,433	2,432	966			504	5,901	15,811	3,044	1,032
1986	191,586	4,314	2,318	923			485	5,579	14,814	2,602	1,030
1987	187,211	4,315	2,430	1,149			519	5,953	15,542	2,844	1,031
1988	168,024	4,630	2,670	1,096			614	6,383	16,320	2,636	1,029
1989[1]	167,116	4,777	2,719	1,194			630	6,816	17,099	2,787	1,031
1990[4]		4,100	2,520	1,210			580	7,200	16,700	2,800	

[1] Preliminary. [2] Figures include gas other than natural (impossible to segregate); therefore, shown separately from other consumption. [3] Estimated proved recoverable reserves of dry natural gas. [4] Estimated. *Source: U.S. Dept. of Energy* T.251

Gas Utility Sales in the United States by Types & Class of Service In Trillions of BTU's

			Class of Service					Revenue—Mil. $ From Sales to Customers					
Year	Total Utility Sales	Number of Cust. (Mil.)	Residential	Commercial	Industrial	Electric Generation	Other	Total	Residential	Commercial	Industrial	Electric Generation	Other
1978	14,748	46.0	5,107	2,500	6,932		211	32,150	12,939	5,696	13,139		377
1979	15,440	46.7	5,083	2,486	7,641		230	38,947	14,833	6,624	17,045		446
1980	15,413	47.4	4,826	2,453	7,957		177	48,303	17,432	8,183	22,215		473
1981	15,375	48.1	4,610	2,375	8,239		150	56,110	19,180	9,286	27,124		520
1982	14,183	48.5	4,770	2,471	6,794		147	63,200	23,700	11,666	27,200		634
1983	12,858	48.9	4,450	2,298	5,970		140	65,837	26,173	12,659	26,315		690
1984	13,162	49.5	4,628	2,396	5,991		146	67,496	27,485	13,205	26,093		713
1985	12,612	50.2	4,513	2,338	3,686	1,949	130	63,293	26,864	12,723	15,659	7,428	620
1986	11,125	50.9	4,381	2,239	2,890	1,449	167	51,201	24,759	11,274	10,546	3,949	673
1987	10,543	51.8	4,385	2,156	2,541	1,306	155	45,492	23,622	10,271	7,500	3,569	530
1988[1]	10,691	52.7	4,692	2,304	2,204	1,331	160	46,109	24,812	10,670	6,702	3,387	539
1989[2]	10,650	53.7	4,600	2,200	2,100	1,100	150	46,750	25,600	11,000	6,300	3,000	600

[1] Preliminary. [2] Estimate. *Source: American Gas Association* T.253

Salient Statistics of Natural Gas in the United States

	In Billions of Cubic Feet										Average Price Delivered to Consumers $ Per Ths. Cu. Ft.						
	Supply				Disposition												
Year	Marketed Production	Storage Withdrawals	Import (Consumed)	Total Supply	Consumption	Exports	Stored	Extraction Loss	Unaccounted For	Total Disposition	Wellhead Price	Imports	Exports	Residential	Commercial	Industrial	Electric Utilities
1975	20,109	1,760	953	22,821	19,538	73	2,104	872	235	21,949	.45	N.A.		1.71	1.35	.96	.77
1976	19,952	1,921	963	21,983	19,946	65	1,756	854	216	22,837	.58	N.A.		1.98	1.64	1.24	1.06
1977	20,025	1,750	1,011	21,924	19,521	56	2,307	863	41	22,786	.79	N.A.		2.35	2.04	1.50	1.32
1978	19,974	2,158	966	22,245	19,627	53	2,278	852	287	23,097	.91	2.21		2.56	2.23	1.70	1.48
1979	20,471	2,047	1,253	22,964	20,241	56	2,295	808	372	23,772	1.18	2.60		2.98	2.73	1.99	1.81
1980	20,180	1,972	985	22,515	19,877	49	1,949	777	640	23,292	1.59	4.28	4.70	3.68	3.39	2.56	2.27
1981	19,956	1,930	904	22,191	19,404	59	2,228	775	501	22,967	1.98	4.88	5.90	4.29	4.00	3.14	2.89
1982	18,520	2,165	933	21,000	18,001	52	2,472	762	475	21,762	2.46	5.03	5.81	5.17	4.82	3.87	3.48
1983	16,822	2,270	920	19,354	16,835	55	1,822	790	642	20,144	2.59	4.78	5.10	6.06	5.59	4.18	3.58
1984	18,230	2,098	843	20,443	17,951	55	2,295	838	143	20,443	2.66	4.08	4.92	6.12	5.55	4.22	3.70
1985	17,198	2,397	950	19,855	17,281	55	2,163	816	356	19,855	2.51	3.21	4.77	6.12	5.50	3.95	3.55
1986	16,791	1,837	750	18,692	16,221	61	1,984	800	427	18,692	1.94	2.44	2.81	5.83	5.08	3.23	2.43
1987	17,349	1,905	993	19,534	17,211	54	1,911	812	359	19,534	1.67	1.94	3.07	5.54	4.77	2.94	2.32
1988	17,841	2,270	1,294	20,691	18,030	74	2,211	817	376	20,691	1.69	1.84	2.73	5.47	4.63	2.95	2.33
1989[1]	18,029	2,852	1,382	21,586	18,923	107	2,529	785	27	21,586	1.69	1.82	2.51	5.64	4.74	2.97	2.43
1990[2]	18,358	1,918	1,505	21,026	18,889	99	2,436	859	−398	21,026	1.67			5.80	4.82	2.88	2.39

[1] Preliminary. [2] Estimate. [3] Total value of market production at the wellhead. *Source: U.S. Dept. of Energy* T.248

United States Marketed Production[1] of Natural Gas In Billions of Cubic Feet

Year	Alaska	Arkansas	California	Colorado	Kansas	Louisiana	Michigan	Mississippi	Montana	New Mexico	Ohio	Oklahoma	Pennsylvania	Texas	West Virginia	Wyoming
1975	160	116	318		844	7,091	102	70	41	1,217	85	1,605	85	7,486	154	316
1976	166	110	354		829	7,007	119	71	43	1,231	89	1,727	89	7,192	153	329
1977	188	104	311		781	7,215	130	83	47	1,203	99	1,770	92	7,051	153	330
1978	203	107	311		854	7,476	148	107	47	1,174	114	1,774	98	6,548	149	357
1979	221	109	248		798	7,266	160	144	54	1,181	123	1,835	96	7,175	151	414
1980	231	112	310		735	6,639	159	175	52	1,150	139	1,892	97	7,116	157	410
1981	243	93	381		640	6,780	153	181	59	1,134	141	2,019	122	6,910	151	425
1982	264	125	384		430	6,172	153	167	57	991	138	1,934	121	6,469	151	425
1983	277	128	415		435	5,332	139	151	52	895	151	1,730	118	5,939	130	444
1984	289	135	476	173	466	5,825	145	158	51	957	186	1,986	166	6,185	144	517
1985	321	155	491	178	513	5,014	132	144	52	905	182	1,936	150	6,053	145	417
1986	305	131	462	164	466	4,895	127	141	47	703	182	1,917	160	6,152	135	403
1987	360	141	425	165	457	5,123	147	140	46	824	167	2,005	163	6,126	160	498
1988	379	167	359	192	576	5,180	146	124	52	792	167	2,107	167	6,286	182	509
1989[2]	394	168	363	217	587	5,078	156	103	51	855	160	2,185	192	6,241	198	666

[1] Comprises gas either sold or consumed by producers, including losses in transmission, quantities added to storage and increases of gas in pipelines. [2] Preliminary. *Source: U.S. Dept. of Energy* T.250

Gasoline

Pressured by a weak economy and higher prices after Iraq invaded Kuwait on August 2, U.S. gasoline demand fell by 1.6 percent in 1990 to 7.21 million barrels per day (bpd). Assuming that the 1990 recession would continue through first-half 1991 and that crude oil prices would average at least $20/barrel, gasoline consumption in 1991 was expected to fall by at least 1 percent to 7.13 million bpd, according to the Department of Energy.

Vehicle miles traveled in 1990 increased by an estimated 2.2 percent to 5.897 billion miles per day, which was the smallest gain in eight years and half the rate of increase in 1989, according to the Department of Transportation. Daily mileage was forecast at 5.919 billion for 1991. The mileage data implied a 3.8 percent increase in fuel efficiency in 1990, compared with gains of 2.2 percent a year from 1981 through 1988. However, a relaxation of the 55-mph speed limit, the consumer trend toward larger cars, and the effects of increased urbanization on miles per gallon indicated the improvement was overstated. Drawdowns in secondary gasoline inventories (stocks held by distributors, wholesalers and retailers) appear to have distorted the data.

The National Petroleum Council estimated total secondary storage capacity at 92 million barrels as of March 1988. Sample data indicate wide swings in secondary gasoline inventories, ranging from a high of 70 percent of capacity to a low of 6 percent. These variations smooth out changes in refiners' shipments. But drawdowns may have intensified, in response to the increased price volatility following the invasion of Kuwait and the loss of Kuwait's refining capacity. Both refiners and retailers had trouble passing on their higher costs in the fall.

The average retail price of gasoline for all grades and services rose by 15 percent in 1990 to $1.22/gallon from $1.06 in 1989. Most of the increase came after the invasion. Third-quarter prices averaged $1.24, and the fourth-quarter average was $1.45 (which included the 5-cent increase in federal gasoline taxes that went into effect on December 1).

Higher retail prices produced a sizable jump in market share for unleaded regular, which rose from 63 percent in July to 71 percent by October. Premium gasoline's market share, which had been 22 percent, fell to 15 percent in October, its smallest share since 1985. Mid-grade unleaded, which held about a 10 percent share before the invasion, also lost ground. Meanwhile, leaded gasoline's share fell to an all-time low of 4 percent, reflecting the continued retirement of older vehicles that can use leaded gasoline.

The U.S. refining industry operated at an average capacity utilization rate of 92 percent or 15.063 million bpd, which was very close to maximum theoretical capacity of 15.571 million bpd. Significant capacity increases were unlikely because of the problems involved in obtaining environmental permits.

The 1990 Clean Air Act will require extensive modifications in refinery operations and output. Gasolines will have to be reformulated with increased oxygen content, lower aromatic hydrocarbon content, and a lower summer Reid Vapor Pressure level of 9 pounds per square inch (effective throughout the Lower 48 for the 1992 driving season). The costs of meeting those requirements are estimated at between 5 and 10 cents a gallon.

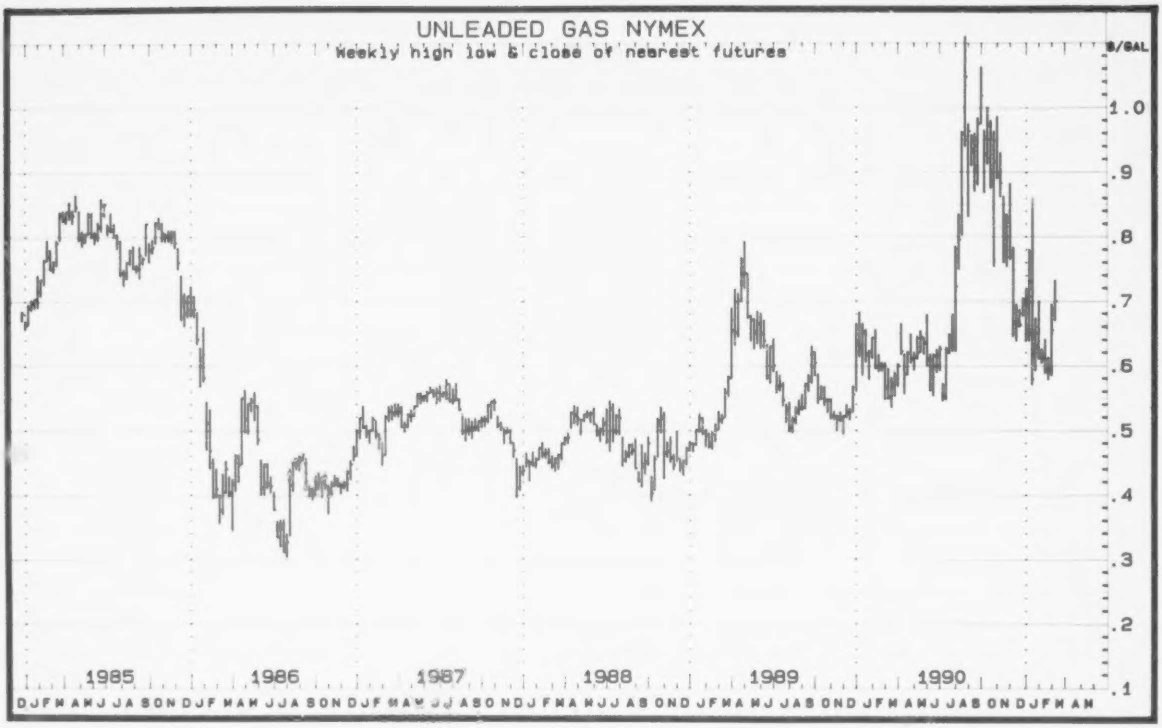
Futures Market

Unleaded regular gasoline and options on unleaded regular futures are traded on the New York Mercantile Exchange.

High, Low & Closing Prices of December Unleaded Regular Gasoline Futures In N.Y. In ¢ Per Gallon

Year of Delivery		Yr. Prior to Delivery			Delivery Year[1]											Delivery Range
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.[1]	
1986	High	—	—	—	61.00	52.50	43.50	40.65	42.60	39.60	35.30	43.55	46.40	43.90	43.00	61.00
	Low	—	—	—	55.10	40.80	34.00	34.56	36.50	36.00	30.32	31.00	34.55	37.70	40.00	30.20
	Close	—	—	—	55.10	41.75	34.00	36.08	38.25	36.00	31.30	43.18	40.24	41.53	41.28	—
1987	High	—	—	51.00	51.25	50.75	50.40	50.80	51.50	54.00	56.25	55.92	50.90	53.50	52.15	56.25
	Low	—	—	49.25	48.65	45.90	46.70	47.70	49.30	51.00	52.86	47.10	48.10	50.10	47.85	45.90
	Close	—	—	51.00	51.00	45.90	50.25	49.30	51.30	53.55	53.92	49.80	50.46	52.46	49.31	—
1988	High	—	—	—	—	—	—	48.80	47.70	47.70	44.80	43.90	42.16	46.92	49.70	49.70
	Low	—	—	—	—	—	—	46.40	45.30	41.50	40.70	40.90	38.00	36.00	42.40	36.00
	Close	—	—	—	—	—	—	46.80	47.38	41.53	43.68	41.80	38.74	44.33	49.05	—
1989	High	—	—	—	—	—	53.90	53.60	51.20	51.70	50.60	51.30	56.75	56.20	53.55	56.75
	Low	—	—	—	—	—	45.90	47.00	47.20	46.30	47.60	46.70	50.80	52.10	49.30	45.90
	Close	—	—	—	—	—	49.10	49.90	49.77	48.60	48.50	51.12	55.73	52.94	50.29	—
1990	High	48.95	49.95	54.05	56.60	56.30	55.50	56.00	55.20	53.50	58.85	90.18	98.75	98.10	93.00	98.75
	Low	48.60	48.20	49.85	49.85	51.65	53.10	51.00	52.95	49.80	49.15	58.55	76.52	75.25	75.40	47.55
	Close	48.95	49.50	54.05	52.55	54.90	54.85	53.65	53.00	50.55	58.50	75.07	96.39	90.15	77.58	—
1991	High	78.95	70.55	67.55	65.40											
	Low	62.45	64.55	58.05	49.25											
	Close	70.80	66.35	64.15	50.35											

[1] Contract expires the last business day of the previous calendar month quoted. *Source: N.Y. Mercantile Exchange* T.0575A



Average Open Interest of Unleaded Regular Gasoline Futures In New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1987	28,026	32,240	41,440	40,630	37,152	32,453	28,977	27,463	27,522	29,271	31,998	38,327
1988	39,887	43,055	44,006	46,094	46,517	50,754	57,897	51,064	49,636	49,649	49,877	50,893
1989	55,838	57,011	59,012	69,547	68,478	61,519	56,913	52,158	51,910	55,312	65,392	71,464
1990	77,580	80,425	75,368	71,132	62,121	72,105	68,826	59,528	60,558	61,253	56,332	56,569
1991	54,476											

Source: N.Y. Mercantile Exchange T.0576

Volume of Trading of Unleaded Regular Gasoline Futures in New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1987	135,208	139,885	211,590	214,982	178,735	175,585	182,661	154,685	155,352	166,365	152,176	190,014	2,056,238
1988	196,616	191,231	245,019	217,139	257,507	330,009	401,196	254,010	294,512	355,982	308,438	240,366	3,292,055
1989	354,167	258,669	373,936	510,964	407,445	443,205	356,939	310,546	412,753	375,489	328,277	352,168	4,484,558
1990	540,633	349,439	461,438	481,665	527,637	472,377	456,342	549,702	373,102	386,472	314,051	248,137	5,205,995
1991	366,772												

Source: N.Y. Mercantile Exchange T.0576A

Refiner Sales Prices of Finished Motor Gasoline to End Users (Excluding Taxes) ¢ per Gallon

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.	Average
1986	89.3	80.5	65.4	59.1	63.8	64.9	58.0	55.5	56.2	53.2	53.2	54.2	62.4
1987	59.7	62.1	62.7	64.9	66.3	67.7	69.6	71.6	70.5	69.7	69.4	67.4	66.9
1988	64.9	63.3	62.5	66.0	68.4	68.1	69.9	71.8	70.0	68.0	67.6	66.1	67.3
1989[2]	65.6	66.1	68.4	81.7	85.5	84.5	82.0	76.6	74.9	74.7	72.7	72.1	75.6
1990[2]	78.6	76.5	75.0	77.8	80.1	81.3	80.6	92.2	100.9	108.6			

[1] Excludes aviation. [2] Preliminary. *Source: Bureau of Labor Statistics Energy Inform. Administration* T.498

Gold

Gold remained out of favor both as an investment and as a store of value during 1990. This occurred despite some seemingly constructive factors, such as the dollar's decline to record lows against other major currencies, political unrest in the USSR and South Africa, and Iraq's invasion of Kuwait.

Having bottomed at $345.85/oz. at the June 14 London P.M. fix, bullion prices briefly followed crude oil prices higher, after Iraq's August 2 invasion. But gold was unable to match its February high of $423.75 and ended 1990 at $391, down $10 or 2.5 percent from the final fix in 1989.

Both primary and secondary gold supplies increased sharply in 1990. The Bureau of Mines estimated world 1990 mine production at a record 2,010 tonnes (about 64.62 million ounces), up 1.7 percent from 1,975.5 tonnes (63.51 million ounces) in 1989. South Africa remained the largest producer, at 600 tonnes (19.29 million ounces), while the U.S. appeared to move into second place with a 13 percent gain in output to a record 9.6 million ounces. The USSR, which still treats all mining statistics as state secrets, was estimated to have slipped into third place with production of 9 million ounces.

In April, India suspended its Gold Control Act, which had been in force for 28 years. The law prohibited individuals from owning raw gold, restricted gold imports, and limited goldsmiths' stocks to 100 grams. The announcement was made on March 19. Prices in India, which had been about 50 percent over free-market prices, fell by 10 percent the following week. Later, it was believed that Mideast interests who had been involved in smuggling gold into India from Persian Gulf ports liquidated their inventories through a Saudi bank. That bank sold 3 million ounces of gold in London on March 26, and London bullion prices fell $23.10 to $370.15 the same day.

The USSR was also a heavy seller of gold in 1990. Soviet officials admitted selling 220 tonnes (7 million ounces) of gold to pay for food imports, and the unavailability of unsecured credit lines forced the USSR to finance other trade through gold loans secured by its official reserves.

Gold loans also were used extensively by various mining companies to finance expansion, though this activity may have peaked in 1988, according to private estimates. Some firms took advantage of lower bullion prices in 1990 to repay old loans at a profit. The loans are denominated in ounces, and are repaid in gold, often at interest rates of 2 percent or less. The gold is then sold in the spot market at prevailing prices, with interest and principal to be paid out of the new production. The market's continued weakness in 1990 made it advantageous to cover many of those loans in the spot market.

U.S. primary refinery production of gold rose to 6.4 million ounces in 1990 from 5.9 million in 1989. Secondary refinery output, including tolled metal, rose by 8 percent to 5.5 million ounces. Reported U.S. industrial consumption of gold was about unchanged in 1990 at 3.2 million ounces. Jewelry and the arts accounted for 53 percent of demand. Industrial uses, mostly electronic, accounted for 38 percent, and dentistry took 9 percent.

Apparent gold demand in the U.S., which includes changes in investor holdings, was estimated to have fallen 29 percent to 7.4 million ounces in 1990. U.S. gold exports more than doubled to 15.7 million ounces from 6.8 million, while imports fell to 2.9 million ounces from 4.9 million. Large unreported investor stocks of gold cloud the interpretation of those numbers. But the Gold Institute predicted that rising production will make the U.S. a permanent net exporter of gold.

Futures Markets

Gold futures and options on those futures are traded on the Commodity Exchange (COMEX) in New York. Commodity exchanges in Chicago, Tokyo Winnipeg, Sydney and Hong Kong also trade gold futures.

World Mine Production of Gold In thousands of kilograms (1 kilogram = 32.1507 troy oz.)

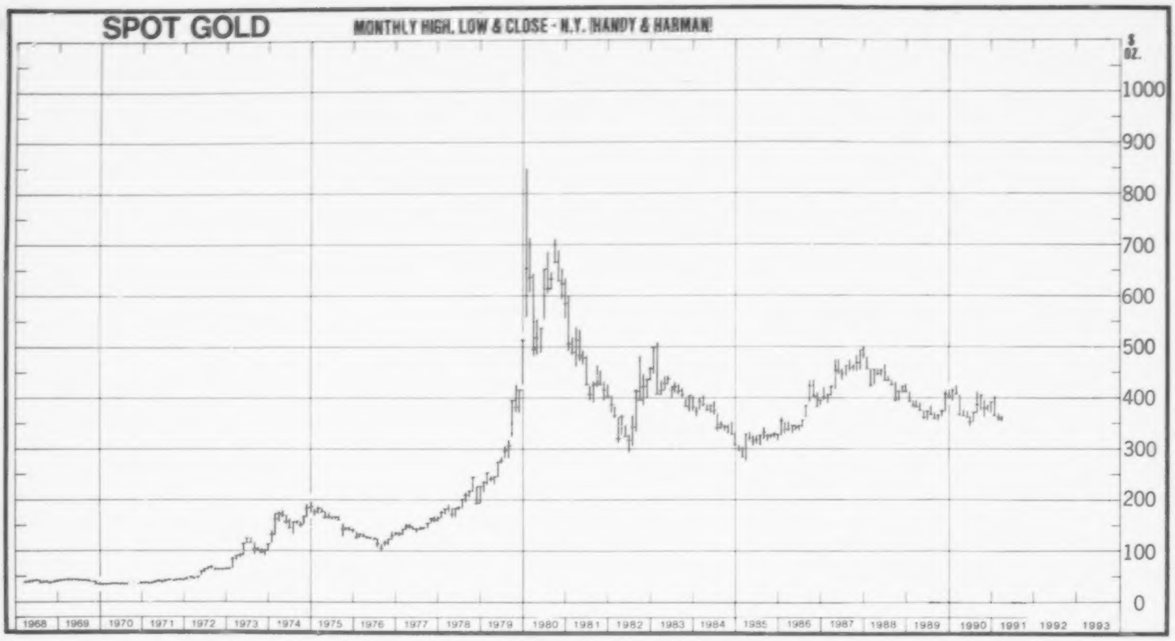
Year	Australia	Brazil	Canada	China	Colombia	Ghana	India	Japan	Mexico	Malaysia	Papua N. Guinea	Philippines	Zimbabwe	South Africa	United States	USSR[1]	Total World
1988[2]	157.0	100.2	134.8	78.0	29.0	11.6	1.9	7.3	9.1	2.9	38.1	35.3	14.2	618.4	200.9	280.0	1,848
1989[1]	202.9	100.0	158.4	80.0	27.1	13.4	2.0	6.1	8.3	2.9	35.0	35.0	14.5	603.0	265.5	285.0	1,976
1990[1]	210	90	170	90										600	300	280	2,010

[1] Estimated. [2] Preliminary. *Source: U.S. Bureau of Mines* T.258

U.S. Mine Production of Recoverable Gold In Kilograms (1 kilo = 32.1507 troy oz.)

Year	Alaska	Arizona	California	Colorado	Idaho	Montana	Nevada	New Mexico	South Dakota	Utah	Other States	Total U.S.
1988	4,210	4,549	22,442	5,126	3,218	9,175	114,322	[2]	13,981	[2]	23,891	200,914
1989[1]	5,756	2,810	29,804	3,448	3,057	11,623	154,573	1,076	16,123	[2]	37,271	265,541
1990[3]	7,400	2,500	29,000	3,000	2,500	12,000	167,000	76,000				300,000

[1] Preliminary. [2] Included in "Other States." [3] Estimate. *Source: Bureau of Mines* T.262



Salient U.S. Gold Statistics In Thousands of Kilograms[7] (1 kilogram = 32.1507 troy oz.)

			Refinery Prod.				Stocks, Dec. 31			Consumption					
Year	Mine Production	Value Mil. $	Dom. & Foreign Ores	Secondary (Old Scrap)	Exports (Excl. coinage)	Imports For Consumption	Treas. Dept.[5]	Futures Exch.	Earmarked[6]	Industry	Dental	Industrial[3]	Jewelry & Arts	Total	Price $ Per Troy Oz.[4]
1980	970	594.1			6,119	4,542	264.3	5.0	354.5	.9	341	1,287	1,505	3,215	612.56
1981	1,379	633.9			6,437	4,652	264.1	2.4	350.6	.6	314	1,210	1,730	3,276	459.64
1982	1,466	551.0	1,308	1,785	2,970	4,921	264.0	2.3	348.6	.8	358	1,102	1,994	3,463	375.91
1983	2,003	849.1	1,972	1,784	3,139	4,593	263.4	2.5	341.4	.6	325	1,085	1,665	3,078	424.00
1984	2,085	751.8	2,101	1,769	4,981	7,869	262.8	2.4	337.3	.8	305	1,167	1,658	3,140	360.66
1985[7]	75.5	771.0	64.6	49.8	123.4	255.0	8,170	65.6	10,494	18.5	9.3	35.8	51.0	96.3	317.66
1986	116.3	1,376.9	75.6	47.3	155.4	489.9	8,150	87.4	10,348	28.8	7.9	35.7	53.4	97.2	368.24
1987	153.9	2,216.0	112.4	63.8	119.6	119.5	8,160	87.6	10,253	23.4	6.9	34.4	59.1	100.6	447.95
1988	200.9	2,831.3	137.8	52.8	328.2	92.5	8,145	44.6	10,045	38.4	7.6	36.2	54.1	97.8	438.31
1989[1]	265.5	3,266.2	183.7	36.9	211.1	152.5	8,146	69.7	9,912	24.8	7.9	36.5	54.4	98.7	382.58
1990[2]	300		200	40	490	90	8,150	70	9,913	21	8	37	50	95	385.00

[1] Preliminary. [2] Estimate. [3] Including space & defense. [4] Engelhard selling quotations. [5] Includes gold in Exchange Stabilization Fund. [6] Gold held for foreign & international official accounts at N.Y. Federal Reserve Bank. [7] Data prior to 1985 are in *ths. of troy ounces*. *Source: Bureau of Mines*

T.260

Commodity Exchange Inc. (COMEX) Depository Warehouse Stocks of Gold In Thousands of Ounces

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1983	2,247	2,621	2,754	2,645	2,636	2,723	2,630	2,648	2,570	2,538	2,500	2,485
1984	2,481	2,472	2,408	2,452	2,412	2,426	2,376	2,395	2,387	2,391	2,349	2,366
1985	2,308	2,308	2,273	2,109	2,136	2,142	2,133	2,107	2,119	2,083	2,099	2,105
1986	2,109	2,352	2,580	2,593	2,567	1,986	1,992	1,621	1,664	1,726	1,787	2,193
1987	2,890	2,798	2,817	2,903	2,628	2,665	2,614	2,624	2,670	2,636	2,644	2,645
1988	2,624	2,605	2,586	1,596	1,566	1,675	1,834	2,099	2,189	1,949	1,629	1,267
1989	1,434	1,408	1,454	1,532	1,606	1,634	1,602	1,602	1,433	1,483	1,731	2,263
1990	2,241	2,225	2,245	2,220	2,048	1,809	1,582	1,530	1,539	1,564	1,585	1,347
1991	1,636	1,686										

Source: Commodity Exchange of N.Y. (COMEX)

T.263

GOLD

High, Low & Closing Prices of December Gold Futures on COMEX In Dollars per Ounce

Year of Delivery	— Year Prior to Deliv. —			Delivery Year												Life of Delivery Range
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1985 High	398.0	389.0	364.5	332.0	327.0	357.0	353.0	342.3	339.0	339.0	350.2	336.5	335.7	333.4	328.2	489.5
Low	370.0	355.0	330.0	317.8	301.5	306.0	328.0	319.0	320.5	315.5	326.5	318.2	324.9	322.1	313.0	301.5
Close	372.2	360.7	333.9	325.2	307.5	349.2	329.9	327.4	325.3	335.2	339.8	327.1	326.7	322.9	326.7	—
1986 High	363.6	358.5	352.3	392.0	375.0	375.0	361.0	358.0	362.2	371.3	404.5	446.0	446.5	443.8	400.0	446.5
Low	350.5	347.5	336.5	348.5	347.5	344.0	341.0	347.5	342.0	349.3	364.0	392.0	400.0	376.5	383.0	336.5
Close	352.4	348.5	351.4	369.7	356.6	345.3	357.7	353.9	354.0	369.7	393.3	429.8	405.0	390.9	389.3	—
1987 High	483.9	434.0	425.0	445.0	427.0	443.0	501.0	500.0	480.0	475.7	490.2	474.8	496.0	497.0	502.3	502.3
Low	443.0	398.5	404.0	415.0	407.0	420.0	432.2	462.5	447.7	452.7	456.9	458.0	457.9	456.0	475.0	365.0
Close	443.0	410.9	424.6	423.8	422.9	436.1	472.7	467.1	462.9	475.1	458.7	458.8	471.2	491.0	486.1	—
1988 High	546.0	536.0	542.0	520.5	482.0	478.0	479.0	477.1	485.0	461.0	448.6	439.7	419.0	428.9	433.5	546.0
Low	498.8	491.5	508.0	473.5	441.3	443.0	461.5	458.0	442.5	435.5	433.0	395.5	398.1	412.6	412.0	395.5
Close	508.8	529.1	519.6	478.5	448.8	472.0	466.5	469.9	448.1	447.3	439.9	399.2	415.1	424.8	413.9	—
1989 High	449.4	461.5	467.0	443.0	422.0	422.0	412.0	396.7	393.5	399.5	382.5	376.7	382.3	419.7	418.7	546.0
Low	429.5	444.8	436.5	419.0	403.3	402.0	393.5	371.0	367.5	374.0	364.6	360.6	364.3	375.7	399.5	360.6
Close	446.3	457.8	439.0	417.1	413.1	407.0	394.8	374.6	385.4	378.7	365.4	372.0	377.6	411.6	400.8	—
1990 High	409.0	450.0	449.0	451.0	451.5	431.5	399.7	392.0	377.8	385.0	425.0	414.3	404.0	391.5	388.5	457.4
Low	389.2	400.8	424.3	418.5	429.5	381.5	382.0	375.0	357.0	360.5	379.2	381.6	361.5	376.0	368.0	357.0
Close	403.3	442.3	429.3	439.0	430.3	389.1	386.3	378.1	368.5	379.2	389.2	408.1	381.3	383.3	385.3	—
1991 High	429.0	411.7	414.2	421.5												
Low	384.0	398.0	386.0	382.0												
Close	404.4	401.7	414.2	382.3												

Source: Commodity Exchange of N.Y. (COMEX) T.266

Gold Total Open interest at New York (COMEX) Average In Thousands of Contracts

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1985	159,878	136,949	141,351	124,045	133,853	125,455	131,743	130,829	130,653	123,408	126,236	130,414
1986	147,771	139,118	141,941	137,748	130,605	116,896	121,769	133,225	149,013	140,621	145,940	135,533
1987	137,650	134,151	146,896	172,605	169,606	147,703	147,005	149,345	147,346	139,482	137,383	154,110
1988	147,067	152,789	158,224	154,788	153,465	145,951	147,822	140,311	153,556	160,951	153,497	144,839
1989	162,226	166,455	167,419	160,215	180,709	164,196	154,517	150,414	151,836	146,262	154,927	151,788
1990	147,884	132,400	126,890	118,750	117,707	113,958	105,496	120,579	116,331	113,873	111,638	110,343
1991	104,666											

Source: Commodity Exchange of N.Y. (COMEX) T.261

Total Volume of Trading of Gold Futures at New York (COMEX) In Thousands of Contracts

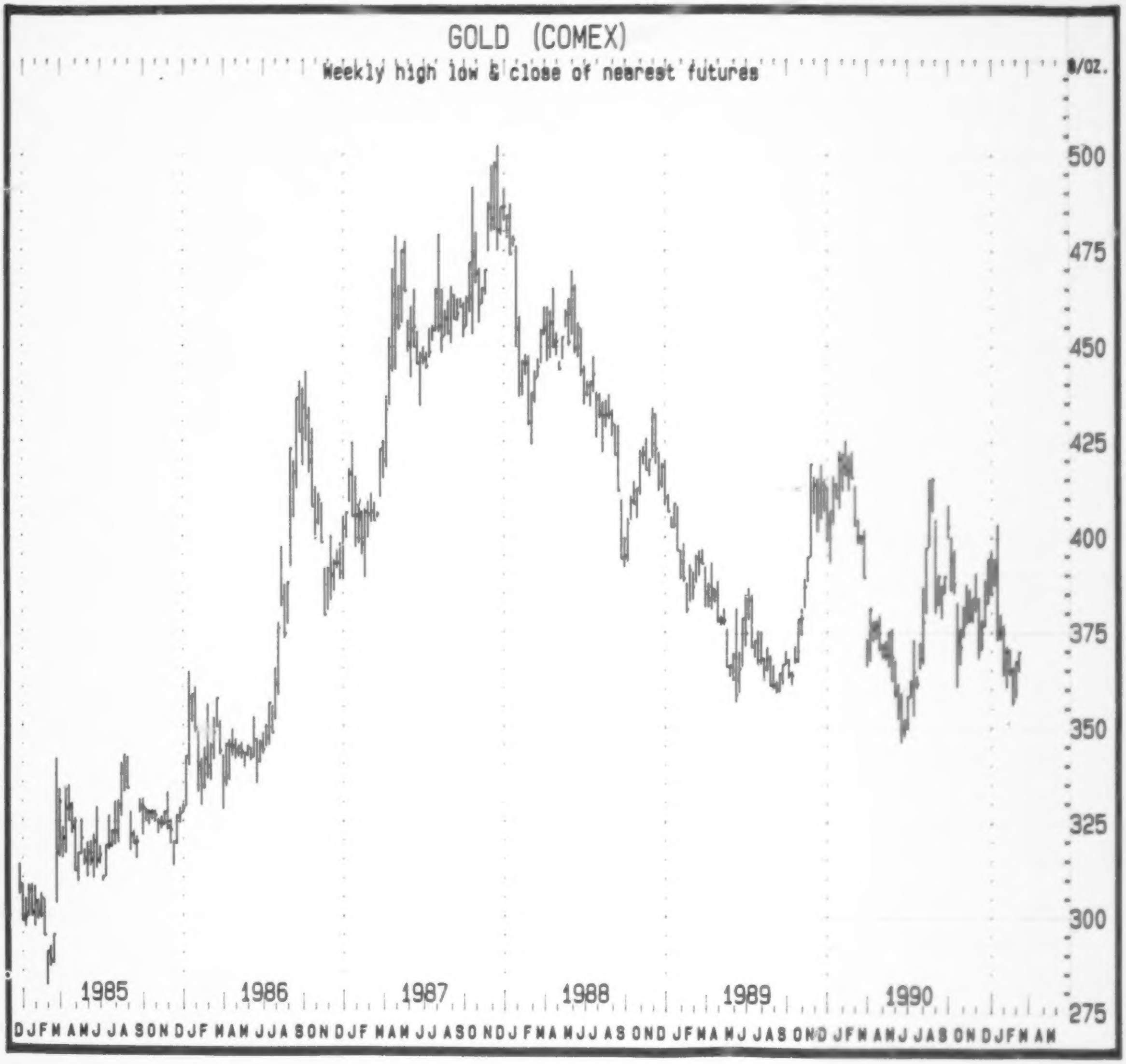
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1985	950.3	589.9	962.8	599.6	752.6	443.6	738.1	657.7	615.8	438.7	479.1	545.8	7,774
1986	1,126.2	574.2	703.9	617.9	482.2	451.6	527.6	711.1	1,054.7	846.9	724.3	579.6	8,400
1987	936.4	706.9	794.9	1,135.2	1,021.2	793.4	796.9	760.3	747.9	951.3	847.1	748.2	10,240
1988	815.0	778.7	965.0	637.7	866.2	946.3	884.2	587.5	790.9	694.5	895.5	634.9	9,496
1989	900.4	800.0	993.8	682.4	932.0	936.6	756.1	591.1	630.0	681.2	1,228.4	876.4	9,989
1990	1,327.1	885.1	975.6	472.4	745.2	541.0	747.4	1,191.5	729.4	879.9	705.3	530.1	9,730
1991	957.3												

Source: Commodity Exchange of N.Y. (COMEX) T.265

U.S. Monetary Stock of Gold at End of Month In Billions of Dollars

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1985	11.095	11.093	11.093	11.091	11.091	11.090	11.090	11.090	11.090	11.090	11.090	11.090
1986	11.090	11.090	11.090	11.089	11.085	11.084	11.084	11.084	11.084	11.066	11.070	11.064
1987	11.062	11.085	11.081	11.076	11.070	11.069	11.069	11.068	11.075	11.085	11.082	11.078
1988	11.068	11.063	11.063	11.063	11.063	11.063	11.063	11.061	11.062	11.062	11.059	11.057
1989	11.057	11.056	11.061	11.061	11.060	11.063	11.066	11.066	11.065	11.062	11.060	11.059
1990	11.059	11.059	11.060	11.060	11.065	11.065	11.064	11.065	11.063	11.060		

Source: Federal Reserve Board T.264



Monthly Average Gold Price (Handy & Harman at New York) $ Per Troy Ounce

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1980	675.4	665.5	553.6	516.8	513.9	600.7	643.3	627.5	675.8	660.3	622.5	594.8	612.51
1981	557.4	500.3	498.8	494.9	479.8	460.8	408.8	411.0	444.1	437.2	413.7	408.7	459.61
1982	384.1	374.1	330.3	350.0	334.4	315.0	340.1	366.0	435.6	421.8	414.1	445.4	375.94
1983	479.9	490.4	419.7	432.2	437.6	412.8	423.1	416.3	411.5	393.2	382.3	387.1	423.83
1984	370.9	386.0	394.4	381.7	377.3	377.7	346.4	347.7	340.9	340.1	340.9	319.0	360.23
1985	302.8	298.8	303.9	324.9	316.1	316.5	317.8	330.2	322.6	326.2	325.5	322.4	317.31
1986	345.5	339.3	345.4	340.6	340.5	342.8	348.9	376.9	419.0	423.6	398.8	391.2	367.70
1987	408.3	401.3	408.9	438.7	460.1	449.6	450.8	460.9	460.2	465.5	466.5	486.0	446.40
1988	476.6	441.9	443.6	451.8	450.8	451.3	437.6	431.3	412.8	406.8	420.1	418.5	436.93
1989	404.0	387.8	390.1	384.4	371.3	367.6	375.0	364.9	361.9	366.8	392.3	409.2	381.28
1990[1]	410.1	416.8	393.1	374.3	369.2	352.3	362.5	395.0	389.5	381	382	377	383.5
1991[1]	384												

[1] Preliminary. *Source: U.S. Bureau of Mines; American Metal Market, Handy & Harman* T.259

Grain Sorghum

Global grain sorghum or milo production in 1990/91 was projected to decline slightly to 54.8 million tonnes. The U.S. remained the largest producer with 26 percent of world output. India has planted more acreage and obtained higher yields, and its offtake was put at 11.5 million tonnes. China was the third largest producer with 5.5 million tonnes, followed by Mexico and Argentina.

World exports were expected to total 7.8 million tonnes, down from 9.3 million in 1989/90. The U.S. had a projected market share of 77 percent, versus 80 percent the previous year. Argentina and Australia were also exporters. Japan was the largest importer and was expected to purchase 3.4 million tonnes, while Mexico bought 2.5 million.

Sorghum use worldwide was forecast to decline by 4 percent to 58.4 million tonnes. Carryover stocks were put at 6.3 million tonnes, well under 10 million a year earlier. As recently as 1986/87, world sorghum stocks were above 23 million tonnes.

The U.S. 1990 sorghum crop was estimated at 562 million bushels, 9 percent less than the year before, as planted acreage declined. Excellent weather dominated the Great Plains, and the national average yield of 60.7 bushels per acre was 10 percent above the 1989 season. Kansas was the largest producing state with a crop of 185 million bushels, followed by Texas and Nebraska.

U.S. beginning stocks of sorghum in 1990/91 were 220 million bushels, down from 440 million a year earlier. Stocks have been trending lower since 1986/87. Domestic supplies, put at 782 million bushels, were 25 percent lower. Feed use accounted for 440 million bushels, while food, seed and industrial disappearance was 15 million. Exports of sorghum were placed at 225 million bushels, down by 25 percent. Projected ending stocks were 100 million bushels, a steep decline from the year before.

U.S. Government Program

The 1990 Farm Bill made a number of changes in the feed grain program, which take effect in 1991. The loan rate was to be determined by using a moving average of previous prices with high and low years omitted. The 1991 loan rate for sorghum was set at $1.54/bu., up from $1.49 in 1990. The 1991 acreage reduction was placed at 7.5 percent.

Futures Market

Sorghum futures have traded on the Kansas City Board of Trade since May 1989.

World Sorghum Supply and Demand In Millions of Metric Tons

	Exports				Imports				Utilization					Stocks[3]		
Crop Year	Argentina	Non-U.S.	U.S.	Total	Japan	Mexico	Total	Total Production	China	Japan	Mexico	U.S.	Total	Non-U.S.	U.S.	Total
1988–9	.7	2.7	8.1	10.8	4.1	2.3	10.8	55.5	5.0	4.1	5.3	12.4	60.0	4.3	11.2	15.4
1989–90[1]	1.2	1.7	7.6	9.3	3.9	3.4	9.3	55.6	5.1	3.9	6.0	13.5	61.1	4.4	5.6	10.0
1990–91[2]	1.0	1.8	6.0	7.8	3.4	2.5	7.8	53.7	5.4	3.4	6.5	11.6	57.3	3.8	2.5	6.5

[1] Preliminary. [2] Estimate. [3] End of crop year season. *Source: Foreign Agricultural Service, U.S.D.A.* T.272a

Salient Statistics of Grain Sorghum in the United States

		For Grain					For Silage			U. S. Exports of Feed Grains			
Crop Year	Acreage Planted[2] for All Purposes (1,000 Acres)	Acreage Harv. (1,000 Acres)	Production 1,000 Bushels	Yield Per Harv. Acre Bushels	Price Cents Per Bushel	Produc. Value Million Dollars	Acreage Harv. 1,000 Acres	Production 1,000 Tons	Yield Per Harv. Acre Tons	Title I Sales (In Thousand Metric Tons)	Foreign Donations[3] (In Thousand Metric Tons)	Mutual Security (AID) (In Thousand Metric Tons)	Total All Gov't. Programs (In Thousand Metric Tons)
1987–8	11,756	10,531	730,809	69.4	170	1,193	429	5,307	12.4	333	38	420	844
1988–9	10,343	9,042	576,686	63.8	228	1,343	518	5,252	10.1	253	888	25	1,339
1989–90[1]	12,642	11,153	617,860	55.4			510	5,304	10.4				
1990–1[1]	10,685	9,260	561,905	60.7									

[1] Preliminary. [2] Grain and sweet sorghums for all uses including syrup. [3] Section 416. *Source: Crop Reporting Board, U.S.D.A.* T.267

Production of All Sorghum for Grain in the United States, by States In Thousands of Bushels

Year	Alabama	Arkansas	Colorado	Illinois	Kansas	Louisiana	Mississip.	Missouri	Nebraska	New Mexico	North Carolina	Oklahoma	South Dakota	Texas
1987	1,440	27,540	9,030	12,040	273,750	11,524	9,425	58,650	106,600	7,980	1,505	18,860	14,310	166,950
1988	1,025	21,080	8,280	6,000	204,600	5,850	8,680	38,070	103,360	8,700	2,310	16,200	11,000	135,450
1989[1]	1,500	21,080	11,375	11,620	198,750	6,175	4,505	45,030	102,300	12,500	3,240	17,640	11,600	164,300
1990[1]	1,125	16,740	9,660	10,400	184,800	5,950	4,875	41,600	110,600	6,000	2,000	15,400	15,900	128,800

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.268

U.S. Grain Sorghum Quarterly Supply and Disappearance In Millions of Bushels

Year Beginning Sept. 1	Supply				Disappearance: Domestic Use						Ending Stocks		
	Begin. Stocks	Production	Imports	Total Supply	Food, Alcohol & Industrial	Seed	Feed & Resid.	Total	Exports	Total	Gov't. Owned[1]	Privately Owned[2]	Total Stocks
1986–7	551.0	938.9	0	1,489.9	10.4	1.6	536.3	548.3	198.3	746.6	409.0	334.3	743.3
Sep.–May	551.0	938.9	—	1,489.9	8.2	1.0	490.9	500.1	154.8	654.9	400.4	434.6	835.0
June—Aug.	835.0	0	—	835.0	2.2	.6	45.4	48.2	43.5	91.7	409.0	334.3	743.3
1987–8	743.3	730.8	0	1,474.1	23.5	1.3	555.3	580.1	231.3	811.4	463.6	199.1	662.7
Sep.–May	743.3	739.2	—	1,474.1	14.2	.8	466.0	481.0	185.3	666.3	535.0	272.8	807.8
June–Aug.	807.8	0	—	807.8	9.3	.5	89.3	99.1	46.0	145.1	463.6	199.1	662.7
1988–9	662.7	576.7	0	1,239.4	20.5	1.5	468.0	490.0	309.9	799.9	340.9	98.6	439.5
Sep.–May	662.7	576.7	—	1,239.4	17.0	.8	424.8	442.6	237.8	680.4	463.6	95.4	559.0
June–Aug.	559.0	—	—	559.0	3.5	.7	43.2	47.4	72.1	119.5	340.9	98.6	439.5
1989–90[3]	439.5	617.9	.1	1,057.5	13.6	1.1	505.4	520.1	285.2	805.3	150.0	102.2	252.2
Sep.–Feb.	439.5	617.9	0	1,057.4	8.0	0	360.8	368.8	175.0	543.8	223.0	290.6	513.6
Mar.–May	513.6	0	.1	513.7	2.5	.6	96.6	99.7	81.3	181.0	190.2	142.5	332.7
June–Aug.	332.7	0	0	332.7	3.1	.5	48.0	51.6	28.9	80.5	150.0	102.2	252.2
1990–1[4]	252.2	546.8	0	799.0	— 15.0 —		440.0	455.0	225.0	680.0			119.0

[1] Uncommitted inventory. [2] Includes quantity under loan & farmer-owned reserve. [3] Preliminary. [4] Estimate. *Source: Economic Research Service, U.S.D.A.*

T.269

Average Price of Sorghum Grain, No. 2, Yellow at Kansas City In Dollars Per 100 Pounds (Cwt.)

Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
1982–3	4.06	3.85	4.25	4.37	4.37	4.54	5.08	5.30	5.37	5.37	5.32	5.69	4.80
1983–4	5.55	5.37	5.25	5.16	5.09	5.03	5.40	5.36	5.39	5.40	4.95	4.74	5.22
1984–5	4.46	4.25	4.28	4.32	4.48	4.33	4.58	4.76	4.74	4.74	4.50	4.06	4.46
1985–6	3.56	3.62	3.75	3.97	3.95	3.80	3.82	4.00	4.25	4.00	3.20	2.71	3.72
1986–7	2.47	2.60	2.70	2.62	2.50	2.57	2.80	2.85	3.10	3.20	2.80	2.55	2.73
1987–8	2.64	2.75	2.90	2.95	3.05	3.24	3.27	3.16	3.21	4.58	4.79	4.28	3.40
1988–9	4.27	4.17	4.00	4.23	4.24	4.26	4.32	4.17	4.29	4.15	3.96	3.88	4.17
1989–90[1]	3.96	3.91	4.00	3.98	4.00	3.84	4.02	4.32	4.47	4.54	4.82	4.27	4.18
1990–1[1]	3.89	3.79											

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.*

T.271

U.S. Exports of Grain Sorghum, by Country of Destination In Thousands of Metric Tons

Yr. Beg. October	Poland	Belg. & Luxem.	Canada	Spain	W. Germany	Taiwan	Venezuela	Israel	Japan	Senegal	Netherlands	Norway	Mexico	South Africa	Total All Exports
1981–2	—	.4		790	.4	—	713	368.0	2,436.9	1.9	.4	201.2	544.2	—	6,289.8
1982–3	—	0		105		—	243	340.7	741.0	13.9	0	44.6	3,260.3	.2	5,402.6
1983–4	0	0		465	0	—	206	573.6	1,504.8	145.0	.2	0	2,758.4	.2	6,225.6
1984–5	0	.1	.4	45	.1	—	1,093	502.7	2,389.8	30.5	19.3	0	2,061.8	11.8	7,454.7
1985–6	0	0	.1	—	.1	244	916	493	2,182	6.9	4.1	0	372	0	4,111
1986–7	97.3	0	6.4	0	0	598	708	228.5	2,508	0	—	0	787.5	2.0	5,118.5
1987–8[1]	126.8	0	1.5	199.4	0	90.2	—	365.5	2,388	0	—	—	849.5	1.9	6,086.0

[1] Preliminary. *Source: Grain & Feed Division, U.S.D.A.*

T.270

Grain Sorghum Price Support Program & Market Prices

Year Beginning September	Price Support Operations (Million Cwt.): Put Under Price Support							No. 2 Yellow ($ Cwt.)			
	Quantity	% of Production	Acquired By CCC	Owned by CCC Sept. 30	Total Paym. to Particip.-Mil.$	Support Loan $ Per Cwt.	Target Price $ Per Cwt.	Kansas City	Texas High Plains	Los Angeles	Gulf Ports
1981–2	155.0	31.5	6.5	24.0		4.07	4.55	4.29	4.87	6.18	5.03
1982–3	134.5	28.8	41.0	92.4	67	4.32	4.64	4.80	5.19	6.56	5.41
1983–4	7.6	2.8	1.7	50.0	114	4.50	4.86	5.22	5.53	6.69	5.77
1984–5	36.4	7.5	36.4	67.6	158	4.32	5.14	4.46	5.04	6.08	4.90
1985–6	201.3	32.0	87.5	116.2	227	4.32	5.14	3.72	4.33	5.57	4.07
1986–7	222.2	42.3	127.9	229.0	570	3.25	5.14	2.73	3.24	4.50	3.22
1987–8	201.3	48.6	119.7	259.6	709	3.11	5.14	3.40	3.81	5.18	3.96
1988–9[1]	23.0	7.1	20.0	210.0	349	3.00	4.96	4.17	4.66		4.81
1989–90[2]					430	2.80	4.82	4.10	4.36		4.75

[1] Preliminary. [2] Estimate. *Source: Economic Research Service, U.S.D.A.*

T.272

Hay

U.S. hay production in 1990 was estimated at 147 million short tons, up slightly from 1989 and well above 126 million tons in 1988. Increased yields in 1990 offset a reduction in harvested area. Average yield was 2.39 tons per acre, 4 percent above the previous season, while harvested area fell by 3 percent to 61.6 million acres.

Production of alfalfa for hay was 83.6 million tons in 1990, and output of other hays was 63.4 million tons.

Domestic hay stocks on December 1, 1990 totaled 105 million tons, nearly 4 million higher than the year-earlier level and about 15 million larger than inventories two years earlier. Hay use from May to November 1990 was 69.1 million tons, substantially above 61.8 million in the corresponding period of 1989. The index of roughage consuming animal units (RCAUs) in 1990/91 was 75.7 million, up slightly from 75.5 million the previous season.

Alfalfa hay prices in 1990/91 peaked in May at $110 per ton and then fell, averaging $86.50 in November and December.

Salient Statistics of All Hay in the United States

Year Beginning May	Acres Harvested 1,000 Acres	Yield Per Acre Tons	Production	Carry-over May 1	Disappearance	Supply	Disappearance	Animal Units Fed[2] Millions	Farm Price $ Per Ton	Farm Produc. Value Million $	Alfalfa (certified)	Timothy	Red Clover	Sudan-Grass
			Million Tons			Per Animal Unit In Tons					Retail Price Paid by Farmers for Seed, April 15 Dollars Per Cwt.			
1985–6	60,461	2.46	148.7	26.8	148.9	2.18	1.84	80.5	67.60	9,437	219.00	58.80	121.00	43.50
1986–7	62,334	2.49	155.4	26.7	149.8	2.33	1.91	78.3	59.70	8,611	219.00	78.10	133.00	44.70
1987–8	60,133	2.45	147.5	32.3	152.7	2.38	2.00	76.3	65.10	8,969	222.00	107.00	160.00	44.20
1988–9	65,055	1.94	126.0	27.1	135.6	2.01	1.78	76.3	85.20	10,735	245.00	132.00	143.00	42.00
1989–90[1]	63,300	2.30	145.4	17.5	135.8	2.13	1.78	76.3	86.00	12,504	249.00	132.00	143.00	45.30
1990–1[1]	61,557	2.39	151.5	27.1		2.30		77.7			253.00	82.10	145.00	47.70

[1] Preliminary. [2] Roughage-consuming animal units fed annually. *Source: Economic Research Service, U.S.D.A.* T.275

Production of All Hay in the United States by Important States In Millions of Tons

Year	Calif.	Idaho	Ill.	Iowa	Mich.	Minn.	Mo.	No. Dak.	Nebr.	N.Y.	Ohio	Okla.	Pa.	So Dak.	Texas	Wis.
1986	8.6	4.7	3.7	8.0	5.7	9.7	6.0	5.4	7.4	5.4	4.3	4.3	5.1	9.3	7.5	10.8
1987	8.6	4.5	3.2	6.7	4.1	7.8	6.1	4.6	6.9	5.1	4.3	4.2	5.1	6.9	7.9	9.1
1988	8.7	3.9	3.3	6.8	4.2	7.0	5.1	1.9	6.5	4.7	3.5	3.9	4.6	3.9	5.4	5.0
1989	8.5	4.0	3.5	6.7	5.2	6.4	6.8	3.0	5.8	4.5	4.6	5.0	4.7	4.3	9.6	8.1
1990[1]	8.5	4.2	3.3	6.3	5.9	6.9	7.3	3.1	7.3	5.3	5.2	4.4	5.0	6.0	7.8	11.8

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.277

U.S. Types of Hay Production & Farm Stocks In Millions of Short Tons

Crop Year	Alfalfa & Mixtures	All Other	All Hay	Corn for Silage[1]	Sorghum[1] Silage	May 1	Dec. 1[3]
	Production					Farm Stocks	
1985	85.1	63.6	148.7	102.7	6.6	26.8	100.5
1986	91.9	63.5	155.4	90.2	5.9	26.7	121.2
1987	84.2	63.2	147.5	88.4	5.3	32.3	118.6
1988	69.3	56.7	126.0	78.8	5.3	27.1	90.3
1989[2]	77.4	68.1	145.5	86.1	5.6	17.5	101.2
1990[2]	83.6	63.4	147.0	86.8	5.5	27.1	105.0

[1] Not included in all tame hay. [2] Preliminary. [3] Data prior to Dec. 1, 1986 are for Jan. 1. *Source: Crop Reporting Board, U.S.D.A.* T.276

Mid-Month Price Received by Farmers for All Hay (Baled) In Dollars Per Ton

Year	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Average[1]
1985–6	80.80	70.20	67.90	65.20	67.10	67.50	64.30	65.40	65.80	66.70	67.10	66.20	67.60
1986–7	66.70	61.00	58.80	58.20	57.60	57.90	56.00	57.70	56.10	58.50	59.20	64.10	59.70
1987–8	71.70	62.90	61.20	62.70	64.10	64.20	61.10	63.20	62.80	64.60	67.20	71.40	65.10
1988–9	79.70	77.00	81.60	81.40	82.90	85.10	86.40	87.60	89.50	91.80	96.90	101.00	85.20
1989–90[2]	100.00	90.20	83.40	81.60	85.70	83.20	83.20	83.50	84.90	85.70	87.50	95.30	86.00
1990–1[2]	101.00	87.80	85.60	84.40	85.70	86.00	81.50	80.70	82.00				

[1] Weighted average by sales. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.278

Heating Oil

U.S. demand for distillate fuel oil fell by 4.7 percent in 1990 to 3.01 million barrels per day (bpd), according to the Department of Energy (DOE). While some of the decline resulted from conservation, in response to higher prices after Iraq invaded Kuwait in August, most was due to the weather. January 1990 was the warmest on record, and it followed the fourth-coldest December. Also, fourth-quarter 1990 was exceptionally warm, leaving many heating oil consumers with extra fuel in their tanks. Total heating degree days for 1990 fell by 12.3 percent to 4,274 from 4,875 in 1989. (A degree day is the number of degrees per day that the daily average temperature is below 65 degrees F.)

A slowdown in economic growth, which turned into a recession during the second half of 1990, reduced distillate demand for its other primary use, diesel fuel. The transportation sector accounted for a little over half the distillate used in the U.S. in 1989, and its share was likely to increase to 64 percent of the market by 2010. Part of the gain will be from expected growth of 1.7 percent a year in transportation usage. The rest will reflect a shift from distillate to natural gas for stationary heating systems.

Because December 1989 was so cold, heating oil prices began 1990 near record highs. The January 1990 futures contract expired on December 29 at 110 cents/gallon, and home delivery prices in the New York City area peaked at 154.9 cents. DOE reported that December 1989 ending stocks of heating oil totaled 106 million barrels, 14.5 percent less than a year earlier. The U.S. average delivered price of home heating oil for January was 114 cents/gallon, excluding taxes. It retreated to a low of 83.8 cents by July, only to soar in response to the invasion.

Other OPEC producers compensated for the crude supplies that were cut off by the U.N. embargo on Iraqi and Kuwaiti crude. However, there were concerns that the loss of Kuwaiti refining capacity would result in tight supplies of refined product. In the U.S., some electric utilities switched from fuel oil to natural gas in early fall, hoarding their oil in case cold weather forced gas to be diverted to home heating use. However, that precaution proved unnecessary.

Although the average diesel engine produces less dangerous pollution than a comparable gas engine, pollution is a concern. Catalytic converters have not worked well in diesel applications, so attempts to clean their exhaust streams have focused on reformulating the fuel itself. As 1991 began, the European Parliament was considering emission standards that would take effect in 1996. As appears to be the case with gas-powered autos, the world may be headed toward one set of standards that would be fairly close to U.S.--or California--requirements.

Futures Markets

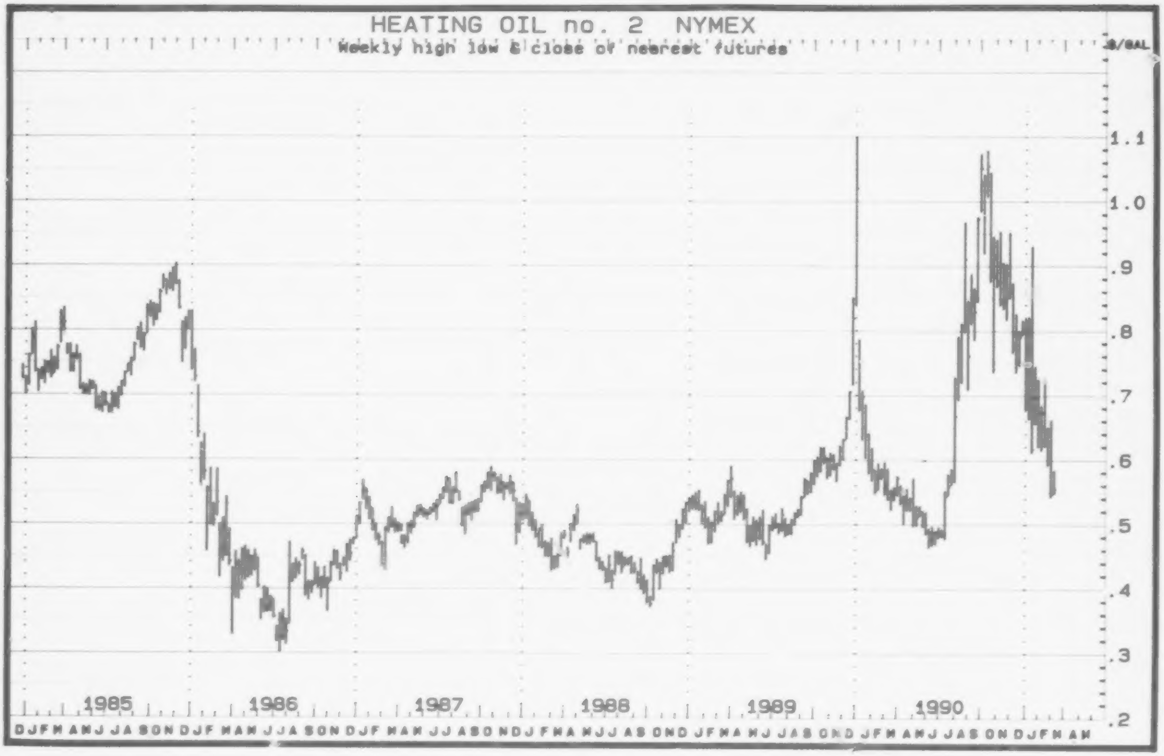
Heating oil futures and options on those contracts are traded on the New York Mercantile Exchange (NYMEX). In London, where the product is called gas oil, futures and options on those futures are traded on the International Petroleum Exchange.

High, Low & Closing Prices of January Heating Oil Futures (No. 2) in N.Y. In Cents per Gallon

Year of Delivery		Year Prior to Delivery[1] Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.[1]	Life of Delivery
1985	High	—	—	83.75	84.40	87.45	87.40	83.25	84.05	86.10	85.45	81.05	79.25	87.45
	Low	—	—	83.15	82.30	82.20	81.75	76.05	76.90	80.80	75.75	74.75	72.25	72.25
	Close	—	—	83.75	83.00	86.87	83.00	76.30	82.55	84.80	79.98	76.61	72.40	—
1986	High	—	—	76.90	79.10	76.50	75.50	74.85	79.35	83.50	88.25	90.75	87.45	90.75
	Low	—	—	76.70	75.50	74.10	70.00	70.35	73.15	76.55	80.30	85.15	74.80	70.00
	Close	—	—	76.10	76.00	76.25	71.40	73.55	79.35	82.49	87.52	87.07	86.55	—
1987	High	57.60	54.00	46.15	44.65	47.10	44.45	40.70	47.80	49.00	46.25	46.75	49.20	57.60
	Low	56.50	44.50	37.60	36.20	41.60	40.20	33.85	36.40	33.53	38.95	41.90	42.35	33.53
	Close	56.50	44.50	37.60	41.33	41.60	41.33	36.20	47.36	44.57	43.08	42.89	48.90	—
1988	High	—	50.15	52.60	53.24	55.05	57.50	60.25	60.20	55.95	58.70	56.90	57.30	60.25
	Low	—	49.02	48.75	50.85	52.70	54.35	56.50	50.75	52.00	55.10	52.80	46.60	46.60
	Close	—	49.02	52.32	52.70	54.60	57.30	58.30	54.36	55.49	57.19	54.87	51.44	—
1989	High	—	47.00	48.60	51.89	50.73	50.85	48.65	47.90	45.64	45.35	48.60	53.90	53.90
	Low	—	45.27	44.21	47.42	48.68	44.48	43.60	44.90	39.85	38.25	41.50	47.75	38.25
	Close	—	45.65	48.02	50.59	50.41	44.48	47.28	45.10	40.02	42.48	48.24	53.48	—
1990	High	—	49.45	55.39	54.50	52.00	54.58	54.50	54.90	59.45	61.70	62.04	110.00	110.00
	Low	—	47.89	49.06	50.95	49.01	48.00	51.00	50.65	54.35	57.20	56.75	61.75	47.89
	Close	—	49.35	53.67	51.98	51.30	52.44	51.43	54.85	59.39	58.93	61.81	101.87	—
1991	High	56.27	60.40	59.55	59.00	58.20	56.00	62.70	95.00	107.00	107.25	95.20	87.30	107.25
	Low	55.55	56.11	56.25	54.60	55.38	53.25	52.95	62.65	78.50	78.20	81.50	73.50	52.95
	Close	56.14	58.64	57.43	56.39	55.95	53.91	62.45	77.64	104.53	91.22	88.42	81.31	—

[1] Contract expires the last business day of the previous calendar month quoted. *Source: N.Y. Mercantile Exchange* T.281

HEATING OIL



Average Open Interest of Heating Oil Futures (No. 2) in New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	21,131	22,265	21,532	20,805	25,699	28,380	32,716	32,181	34,547	37,149	37,702	30,835
1984	31,359	24,817	17,751	17,421	17,818	17,491	18,646	20,928	23,968	28,550	26,520	25,306
1985	23,197	16,243	16,881	17,196	16,970	20,150	21,419	25,061	29,626	31,726	35,062	33,275
1986	28,866	29,476	32,783	33,841	37,897	50,299	63,935	65,337	[illegible]0,994	79,030	75,477	70,723
1987	66,228	60,479	47,798	45,494	40,865	44,530	52,480	54,696	65,781	70,167	74,093	74,[illegible]45
1988	59,605	51,640	49,705	44,674	49,155	58,960	77,018	77,777	87,942	93,762	85,350	80,0[illegible]
1989	75,038	63,791	60,455	57,533	49,174	49,527	59,799	69,578	88,642	97,064	99,293	105,240
1990	83,020	68,065	67,389	76,954	85,349	112,506	116,108	103,280	97,589	93,63[illegible]	92,399	81,864
1991	74,216	81,710										

Source: N.Y. Mercantile Exchange T.279

Volume of Trading of Heating Oil Futures[1] in New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	153,864	112,649	137,237	121,300	163,923	[illegible]9,138	138,706	140,671	187,283	169,271	200,400	193,877	1,868,322
1984	254,788	209,802	144,326	144,041	161,689	144,182	120,668	153,913	137,011	281,183	182,005	163,938	2,091,546
1985	286,264	149,403	162,503	137,064	122,699	133,339	148,117	157,552	202,785	246,558	219,126	242,323	2,207,733
1986	274,057	221,156	214,501	207,748	223,943	247,552	309,662	282,636	285,246	387,054	271,497	349,992	3,275,044
1987	399,813	328,327	348,204	282,109	238,048	273,708	329,078	343,355	347,152	437,157	422,982	[illegible]13,462	4,293,395
1988	506,182	377,379	403,181	267,233	286,365	380,550	431,231	363,276	441,939	578,648	475,675	423,356	4,935,015
1989	534,041	422,660	430,4[illegible]	372,640	334,973	445,822	372,388	402,420	475,402	554,733	574,693	820,748	5,740,967
1990	754,945	415,420	462,479	451,708	516,989	463,263	518,993	723,152	505,810	612,310	521,969	429,833	6,376,871
1991	603,677	523,870											

[1] No. 2 heating oil. *Source: N.Y. Mercantile Exchange* T.280

U.S. Gross Input to Crude Oil Distillation Units In Millions of 42-Gallon Barrels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1977	453.4	425.5	456.2	438.3	463.1	457.9	471.1	465.9	457.8	466.3	449.2	463.5	5,468
1978	450.1	401.4	448.3	426.6	472.4	451.5	470.5	483.8	462.2	475.9	470.6	487.6	5,501
1979	467.7	409.3	449.6	445.2	457.1	453.6	477.9	474.0	447.1	457.9	447.0	472.4	5,459
1980	453.6	421.7	433.8	413.5	423.4	421.7	422.5	412.3	408.2	402.9	403.4	432.4	5,049
1981	418.3	369.6	391.4	368.5	389.3	381.9	389.6	409.2	382.2	382.9	377.5	393.8	4,654
1982	371.5	325.1	361.4	353.1	379.1	388.1	399.6	378.0	376.7	376.8	364.4	368.8	4,443
1983	355.4	307.8	344.8	352.0	374.4	378.3	390.9	383.1	381.9	371.1	366.8	354.1	4,361
1984	364.8	356.0	374.2	362.3	385.5	372.5	377.5	388.6	374.2	376.7	367.7	371.0	4,471
1985	359.1	321.6	356.0	359.1	380.3	372.7	392.6	378.9	362.9	383.3	378.9	395.1	4,440
1986	390.1	337.9	364.5	378.1	412.7	400.4	403.3	415.2	395.7	395.3	387.8	400.3	4,681
1987	394.5	347.7	379.3	379.1	398.3	399.2	422.0	419.3	399.8	399.8	392.2	414.9	4,746
1988	408.4	373.8	410.5	400.4	422.8	411.3	427.9	432.5	400.7	412.4	400.6	420.2	4,922
1989[1]	418.8	364.3	407.9	393.9	420.4	422.0	432.7	434.7	416.9	419.5	406.5	410.6	4,960
1990[1]	422.5	487.6	420.9	410.3	420.7	416.6	446.3	441.0	429.0				

[1] Preliminary. *Source: Bureau of Mines*

T.282

Refiner Sales Prices of Products for Resale (excluding taxes) ¢ per gal.

Residual Fuel Oil (Sulfur one % or less) to end users

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1985	71.2	71.1	69.8	67.5	61.2	59.9	58.9	57.1	62.8	63.6	61.7	62.6	64.4
1986	62.0	49.0	42.7	36.8	35.0	32.3	27.4	29.3	31.5	31.9	33.7	37.7	37.2
1987	45.5	43.8	43.4	43.9	44.9	45.8	48.3	46.0	44.0	44.5	45.0	41.4	44.7
1988	41.9	40.2	36.9	35.8	36.8	35.3	35.7	36.0	34.7	34.4	36.1	38.8	37.2
1989	41.7	39.8	42.0	46.6	46.5	42.8	42.1	39.6	40.2	43.2	44.1	53.4	43.6
1990[1]	60.0	51.3	45.3	39.6	37.9	34.2	36.3	50.7	59.4	68.6			
1991													
						No. 2 Fuel Oil							
1985	75.7	75.2	76.1	79.3	76.5	72.9	70.3	72.1	77.0	81.7	84.9	83.2	77.6
1986	73.6	56.4	51.9	45.9	45.2	40.0	34.8	40.0	41.6	41.0	42.4	44.2	48.6
1987	50.6	49.3	49.0	49.4	51.5	52.6	54.9	55.1	53.3	56.7	57.0	54.2	52.7
1988	52.0	48.9	47.6	50.7	50.1	46.6	43.3	44.3	43.3	41.9	45.1	49.9	47.3
1989	53.2	51.1	54.4	56.5	52.6	49.6	50.4	51.2	56.4	60.1	60.4	72.8	56.5
1990[1]	73.8	57.7	57.9	57.5	54.5	49.4	51.9	72.1	85.2	95.0			
1991													
						No. 2 Diesel Fuel							
1985	74.9	74.2	75.6	79.2	78.9	75.5	72.3	72.5	76.3	80.5	84.3	82.1	77.2
1986	73.3	56.1	47.4	46.3	44.2	39.6	34.0	38.8	41.8	40.9	41.9	43.4	45.2
1987	49.5	49.6	48.7	49.7	52.1	53.1	55.1	57.1	56.0	58.1	57.9	53.8	53.4
1988	51.0	49.0	49.2	51.9	51.3	47.9	44.0	45.0	44.7	42.0	44.6	48.0	47.3
1989	51.1	52.8	56.0	59.5	54.0	50.8	50.5	52.4	58.5	62.2	62.0	68.4	56.7
1990[1]	69.3	57.1	57.7	57.5	55.4	50.5	52.0	73.7	87.3	99.4			
1991													
						Kerosine—Type Jet Fuel							
1985	79.6	79.5	78.9	79.4	78.2	76.1	75.2	76.8	79.2	81.6	83.6	83.1	79.4
1986	77.9	67.7	58.6	50.0	47.5	44.5	40.1	39.8	42.5	43.4	43.7	45.2	49.5
1987	49.0	49.7	49.1	50.2	51.6	52.7	55.3	57.0	55.9	58.0	58.6	55.6	53.8
1988	53.2	52.4	50.4	50.4	51.4	51.0	47.5	47.9	46.9	45.2	46.4	50.1	49.5
1989	56.2	55.4	56.5	59.5	56.6	54.4	53.5	54.5	58.6	63.2	63.4	67.3	58.3
1990[1]	77.0	66.9	61.7	59.9	57.4	54.8	56.0	71.3	93.2	113.5			
1991													
						Propane (Consumer Grade)							
1985	40.1	39.3	38.0	37.9	38.1	37.0	36.3	36.5	37.6	39.7	43.0	46.8	39.8
1986	44.0	35.4	29.2	27.3	28.5	28.3	25.3	24.6	24.8	25.1	24.3	23.6	29.0
1987	25.0	24.4	23.6	24.4	24.0	23.6	24.4	25.6	26.1	26.8	27.1	26.0	25.2
1988	26.8	26.6	25.6	25.2	24.9	24.3	21.8	22.1	22.5	22.1	22.1	22.9	24.0
1989	24.0	22.7	22.5	22.7	22.1	21.4	20.7	21.7	23.1	24.4	24.3	36.4	24.7
1990[1]	54.5	34.0	27.1	25.2	24.0	24.9	27.3	36.3	43.6	53.5			

[1] Preliminary. *Source: Energy Information Administration*

HEATING OIL

Stocks of Distillate Fuel in the U.S., First of the Month In Millions of Barrels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Residual Fuel — Oil Stocks — Jan. 1	Residual Fuel — Oil Stocks — July 1
1980	228.7	212.4	191.7	177.9	177.2	183.4	196.6	213.8	226.3	232.4	225.7	222.4	95.6	87.8
1981	205.4	179.4	172.6	164.4	164.6	171.8	179.9	186.3	200.2	207.3	201.2	200.1	91.5	69.4
1982	191.5	164.4	147.4	126.3	108.0	113.6	123.7	[illegible]	158.7	161.2	170.1	185.6	78.0	60.7
1983	178.6	167.6	148.2	118.1	103.1	108.9	113.7	130.7	142.4	154.0	162.6	161.2	66.2	49.9
1984	140.3	119.3	132.2	109.6	97.7	98.1	112.8	124.4	133.3	142.9	152.2	161.0	48.5	46.9
1985	161.1	142.4	121.4	99.3	96.8	104.4	109.7	115.7	113.8	117.4	123.4	139.7	53.0	39.6
1986	143.7	136.5	112.4	98.8	95.9	98.9	107.9	118.9	137.7	152.4	151.6	158.3	50.4	42.8
1987	155.1	141.3	123.7	109.3	100.3	101.3	104.4	114.6	124.7	126.8	121.0	128.0	47.4	41.4
1988	134.5	128.1	110.3	89.8	95.0	104.9	110.4	120.0	125.7	131.5	128.2	128.8	47.4	42.2
1989[1]	123.5	120.3	107.5	96.6	98.4	99.3	99.6	115.0	116.3	123.2	121.7	119.8	44.6	44.1
1990[1]	105.7	118.0	112.2	99.7	99.5	102.8	109.4	125.2	131.1	136.5			43.8	46.8

[1] Preliminary. *Source: Bureau of Mines* T.285

U.S. Production of Distillate Fuel Oil In Millions of Barrels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	93.4	80.2	79.3	73.8	76.7	79.4	83.4	76.3	80.6	80.3	81.1	89.6	974.1
1981	92.6	78.6	77.0	72.5	76.1	75.0	74.2	82.3	78.3	77.0	81.5	88.6	953.8
1982	80.3	67.9	70.9	70.7	81.2	81.9	84.8	77.7	79.7	88.0	85.8	82.3	951.3
1983	72.0	59.8	61.8	65.1	75.8	76.4	80.7	81.1	82.2	83.1	80.4	78.2	896.5
1984	80.3	83.1	76.8	70.3	81.3	86.4	84.3	82.5	81.2	83.4	84.8	86.7	981.2
1985	81.6	70.1	70.3	74.7	83.3	79.4	82.0	80.4	77.8	90.0	93.1	98.4	980.9
1986	89.9	71.8	81.9	83.6	88.6	81.9	84.0	90.6	86.0	84.2	87.5	91.2	1,021.2
1987	85.5	71.6	75.1	76.6	79.5	80.7	83.7	83.9	82.4	86.2	91.1	100.5	996.6
1988	93.3	77.3	83.9	86.0	91.0	86.8	86.3	88.3	83.3	87.6	87.3	95.1	1,046.3
1989[1]	92.2	78.4	84.1	83.6	85.2	84.3	88.3	90.1	88.6	90.1	91.9	101.3	1,058.0
1990[1]	97.2	77.1	82.3	84.1	89.1	89.8	93.2	97.1	89.0				

[1] Preliminary. *Source: Dept. of Energy* T.286

U.S. Imports of Distillate Fuel Oil In Millions of Barrels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	5.5	6.9	6.0	4.6	3.9	3.2	3.6	2.4	3.0	3.6	4.0	5.2	51.9
1981	8.5	9.1	4.6	[illegible]	5.5	6.7	5.5	5.4	3.9	3.7	3.7	2.9	63.1
1982	3.0	3.7	1.5	1.8	2.3	3.1	3.9	2.5	1.8	2.8	4.4	3.4	34.0
1983	2.1	1.6	1.3	2.2	4.5	[illegible]	8.3	9.3	7.8	8.1	6.1	6.8	63.5
1984	9.3	13.2	3.6	6.6	7.8	7.7	6.2	8.0	8.7	13.0	9.5	5.9	99.4
1985	8.4	4.0	4.8	7.6	6.1	4.6	3.0	2.5	6.7	8.1	8.4	8.9	73.1
1986	10.1	4.7	6.7	4.4	4.6	5.1	9.7	11.5	7.8	7.5	7.6	10.5	90.3
1987	6.9	7.1	9.2	5.7	6.3	8.0	11.8	6.9	6.6	7.3	5.6	11.7	93.2
1988	13.2	11.1	7.6	6.3	7.8	6.6	6.9	8.6	9.2	10.4	9.8	12.7	110.4
1989[1]	10.2	9.0	13.6	9.0	9.0	7.0	10.4	7.9	7.5	8.1	9.2	10.1	111.7
1990[1]	15.5	10.0	8.7	9.2	6.4	7.7	7.1	9.1	6.8				

[1] Preliminary. *Source: Dept. of Energy* T.287

U.S. Domestic Consumption of Distillate Fuel Oil In Millions of Barrels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	115.1	107.6	98.5	79.0	74.5	69.5	69.7	66.2	77.6	90.5	88.5	112.1	1,049.0
1981	127.4	94.5	90.0	76.0	74.7	73.9	73.7	74.0	75.4	86.9	86.4	99.6	1,032.5
1982	108.0	86.4	91.3	89.3	75.8	73.5	63.8	68.8	75.2	80.0	74.2	88.5	974.9
1983	86.7	77.8	91.4	80.9	73.0	75.7	70.4	77.3	77.3	80.9	86.2	104.3	981.9
1984	109.3	82.2	101.0	87.8	87.2	77.8	77.6	79.3	79.6	85.7	84.8	88.8	1,041.2
1985	107.4	93.2	95.9	83.9	80.8	77.8	75.5	81.7	77.3	89.9	82.4	100.9	1,046.8
1986	103.2	95.7	98.2	87.1	85.6	76.3	80.4	81.2	76.2	90.3	86.3	103.2	1,063.7
1987	102.6	93.7	96.6	89.7	83.2	83.7	84.1	79.2	85.1	97.7	88.0	102.9	1,086.4
1988	110.3	103.2	109.7	85.9	86.7	85.6	81.8	89.1	84.6	99.8	95.5	110.4	1,142.5
1989[1]	102.2	95.5	106.3	89.2	91.7	90.1	80.5	91.9	86.7	96.9	99.3	121.3	1,152.2
1990[1]	98.5	91.0	101.2	91.8	89.8	88.5	83.5	98.7	86.7				

[1] Preliminary. *Source: Dept. of Energy* T.288

Hides and Leather

U.S. hide production declined to about 1.09 million tonnes in 1990, slightly below the year-earlier level, due to lower cattle slaughters. Supplies are dependent on cattle slaughter, which has been in a long-term downtrend in the U.S. The Soviet Union was expected to be the largest single producer of hides in 1990, and the U.S. a close second. Total world production was estimated at 4.63 million tonnes, slightly above the year-earlier level. Other major producers included Brazil, Argentina, France, Germany, and Australia.

Domestic utilization of bovine hides and skins was expected to be about 508,000 tonnes in 1990, slightly below a year earlier. World utilization was estimated at 4.86 million tonnes. The leading U.S. user of leather made from hides is the footwear industry, which consumed about half of all domestic leather shipments in 1990. U.S. demand for heavier-weight and water-resistant leather footwear improved from 1989 levels, but demand for sole leather has shown little growth in recent years because of cheaper substitutes. One of the fastest-growing domestic markets for leather was furniture and automobile upholstery. Almost 20 percent of furniture manufactured in the U.S. uses leather upholstery.

The U.S. was the leading exporter of hides in 1990, shipping about 600,000 tonnes. That represented about 48 percent of the world market. The U.S. export share has declined in recent years, due largely to higher prices. Other major exporters of hides included the EC, the USSR, and Australia. Hides from the U.S. are generally higher priced and higher quality than other origins.

Major importers of U.S. hides in 1990 included South Korea, Japan, and Italy. Exports to Korea and Taiwan have been helped by strong U.S. demand for high-priced footwear that is produced in those countries.

There were a number of trade issues that made news in 1990, not the least of which was Japanese trade constraints. In response to EC complaints about tariffs on Japanese leather imports, Japan pledged to expand quotas and partly cut tariffs on leather goods. It was unclear if that would be enough to satisfy the EC, however. Also, the U.S. Department of Commerce decided to issue a countervailing duty against some leather imported from Argentina, after U.S. tanners complained that country had unfair policies restricting hide imports.

U.S. cattle hide prices rose by about 4 percent in 1990. Prices were expected to remain firm in 1991 as domestic demand increases.

World Production of Bovine Hides and Skins In Thousands of Units of Metric Tons

Year	Argentina	Australia	Brazil	Canada	Colombia	France	Germany East	Germany West	Mexico	Italy	Poland	South Africa	Turkey	New Zealand	United Kingdom	United States	USSR
1982	293	155	308	98	92	179	44	149	138	96	75	53	56	46	106	1,019	867
1983	286	160	322	99	84	200	45	149	140	99	70	61	59	44	109	1,040	892
1984	297	129	310	94	87	190	45	164	145	101	73	60	60	37	113	1,066	917
1985	319	124	340	94	92	190	48	159	139	101	71		61	41	110	1,028	942
1986	332	131	324	92	92	186	48	161	120	95	86	59	62	36	104	1,115	1,022
1987	314	144	350	85	86	193	44	159	122	91	80	59	62	54	101	1,134	1,060
1988	303	139	390	82	93	185	43	148	176	89	80	51	63	41	90	1,154	1,090
1989[1]	304	137	400	84	97	170	44	140	222	88	80	55	74	37	91	1,160	1,090
1990[2]	294	150	370	81	99	165	35	140	185	87	77	61	77	28	93	1,165	1,050

[1] Preliminary. [2] Forecast. *Source: Foreign Agricultural Service, U.S.D.A.* T.289

Salient Statistics of Hides & Leather in the United States

Year	New Supply of Cattle Hides					Wholesale Prices—¢ lb.		Production		Upper & Lining Leather Exports	Wholesale Leather Indexes		Footwear	
	Domestic Slaughter										Upper			
	Federally Inspected	Uninspected[4]	Total Production	Net Exports	Total New Supply	Heavy Native Cows[2]	Heavy Native[3] Steers	All U.S. Tanning	Cattle-Hide	Ths. Sq. Ft.	Men	Women	Production[5]	Export
	Thousands of Equivalent Hides							In Ths. Equiv. Hides			1982 = 100		Mil. Pairs	
1982	33,907	1,936	35,843	22,553	13,290	45.1	42.3	18,229	15,028	159,804	100.0	100.0	359.1	7.7
1983	34,816	1,833	36,649	21,205	15,444	53.5	50.2	18,610	15,430	155,808	101.7	103.5	339.2	6.2
1984	35,880	1,702	37,582	25,194	12,388	67.0	60.9	16,940	14,021	163,373	102.5	101.6	303.2	6.2
1985	34,765	1,528	36,293	24,398	11,895	57.55	53.9	15,230	12,550	131,505	104.2	103.6	265.1	9.2
1986[1]	35,913	1,375	37,288	26,522	10,766	68.06	64.2	14,460	12,497	160,888	107.2	104.3	240.9	10.3
1987[1]	34,468	1,179	35,647	24,007	11,640		79.8	14,800	12,846	194,152	111.4	107.2	230.0	14.7
1988[1]	34,048	1,031	35,079	24,527	10,552		87.7	13,375	11,569	215,358	121.3	112.5	235.1	18.4
1989[1]	33,010	907	33,917	22,495	11,422		90.0	13,029	11,329		127.5	116.2	210.5	
1990[1]	32,389	831	33,220	20,920	12,300									

[1] Preliminary. [2] Heifers. [3] F.O.B. Chicago. [4] Includes farm slaughter; diseased & condemned animals & hides taken off fallen animals. [5] Other than rubber. *Sources: Leather Industries of America; Bureau of Labor Statistics; Dept. of Commerce* T.290

U.S. Exports of Upper & Lining Leather In Thousands of Square Feet

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	15,769	16,873	18,710	13,024	12,652	15,483	15,481	15,215	15,818	19,051	20,880	13,641	192,597
1981	19,633	14,418	19,717	17,678	18,016	18,692	13,921	10,918	15,393	12,682	19,464	11,660	192,193
1982	10,849	10,343	13,696	15,534	17,449	18,610	18,486	12,065	10,417	11,842	9,726	10,786	159,804
1983	11,052	12,453	15,078	15,200	13,492	14,868	12,013	13,099	12,715	14,027	12,400	9,412	155,808
1984	13,624	13,015	17,787	14,772	19,514	14,294	12,907	14,046	11,219	11,533	10,231	10,431	163,373
1985	10,266	8,855	11,049	11,637	12,112	16,233	9,919	10,763	8,085	12,310	12,452	7,824	131,505
1986	12,032	10,849	13,050	13,652	14,560	13,945	11,902	16,769	11,502	13,043	14,003	15,581	160,888
1987	12,172	15,625	19,865	18,874	18,818	19,585	15,455	15,015	14,806	13,557	15,703	14,677	194,152
1988[1]	16,033	18,431	18,430	14,647	19,273	17,623	15,023	13,967	21,022	22,556	15,835	22,519	215,358

[1] Preliminary. *Source: Leather Industries of America* T.292

U.S. Production of All Footwear (Shoes, Sandals, Slippers, Athletic, Etc.) In Millions of Pairs

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	34.9	33.2	33.9	32.9	34.1	32.5	27.3	30.7	32.5	36.2	29.5	28.6	386.3
1981	31.1	30.4	34.1	32.6	31.6	30.0	26.8	30.4	32.6	34.7	30.3	27.4	372.0
1982	29.4	30.2	34.4	30.0	31.0	31.0	26.1	30.7	31.4	31.2	28.4	25.3	359.1
1983	27.7	31.6	31.3	26.9	29.8	28.4	22.4	30.2	29.3	28.9	27.6	24.8	339.2
1984	27.3	29.1	30.2	27.7	28.6	24.6	20.7	26.0	21.9	25.2	22.3	19.6	303.2
1985	22.5	21.0	22.2	22.2	24.9	21.1	19.7	24.5	22.4	24.8	21.1	18.7	265.1
1986	22.5	21.6	21.3	21.2	20.8	18.4	18.4	20.8	19.7	21.4	18.4	16.6	240.9
1987	18.2	19.2	20.7	20.0	19.7	20.7	16.1	20.6	20.9	20.6	18.2	15.2	230.0
1988	16.7	20.8	21.6	19.3	20.2	19.7	14.0	21.4	21.3	21.2	21.3	17.6	235.1
1989[1]	18.1	18.5	19.6	16.6	18.7	17.5	13.7	19.7	17.4	19.0	17.5	14.3	210.5
1990[1]	17.8	17.2	18.5	16.7	18.9	16.7	14.3	18.8	16.6				

[1] Preliminary. *Source: U.S. Department of Commerce* T.295

U.S. Imports and Exports of All Cattle Hides In Thousands of Hides

	Imports		U.S. Exports—By Country of Destination												
Year	Total	From Canada	Total	Canada	France	W. Germany	Japan	Mexico	Netherlands	Poland	Taiwan	Spain	Romania	Korea Repub.	Czech.	Italy
1980	880	859	19,512	1,046	238	206	7,476	1,972	164	522		112	1,046	2,653	318	690
1981	1,028	881	19,703	1,212	137	319	7,512	2,485	94	203		394	680	3,579	334	486
1982	658	592	23,175	1,041	478	671	6,469	1,882	280	790		643	939	4,572	415	1,395
1983	665	570	21,281	1,235	332	343	6,413	1,296	174	303		246	1,318	4,635	489	823
1984	711	669	25,029	1,072	292	252	7,334	1,858	221	319	2,697	242	1,032	5,423	669	1,170
1985	1,044	883	24,956	729	215	110	6,824	2,287	71	402	2,797	214	1,168	6,441	418	1,134
1986	761	594	26,481	666	262	71	6,624	1,002	133	179	3,542	190	688	9,316	521	1,502
1987	490	335	23,921	830	151	54	5,956	1,427	50	39	3,166	143	308	10,062	311	392
1988	642	477	25,169	759	93	97	7,140	1,865	100	58	2,493	142	624	9,986	249	319
1989[1]	906	817	23,401	614	17	68	6,268	1,284	132	184	1,886	64	1,154	10,322	261	343
1990[1]	661	436	21,581	674	28	78	6,802	1,438	99	2	1,476	175	253	9,839	141	136

[1] Preliminary. *Source: Leather Industries of America* T.297

Average Factory Price of Footwear in the United States In Dollars Per Pair

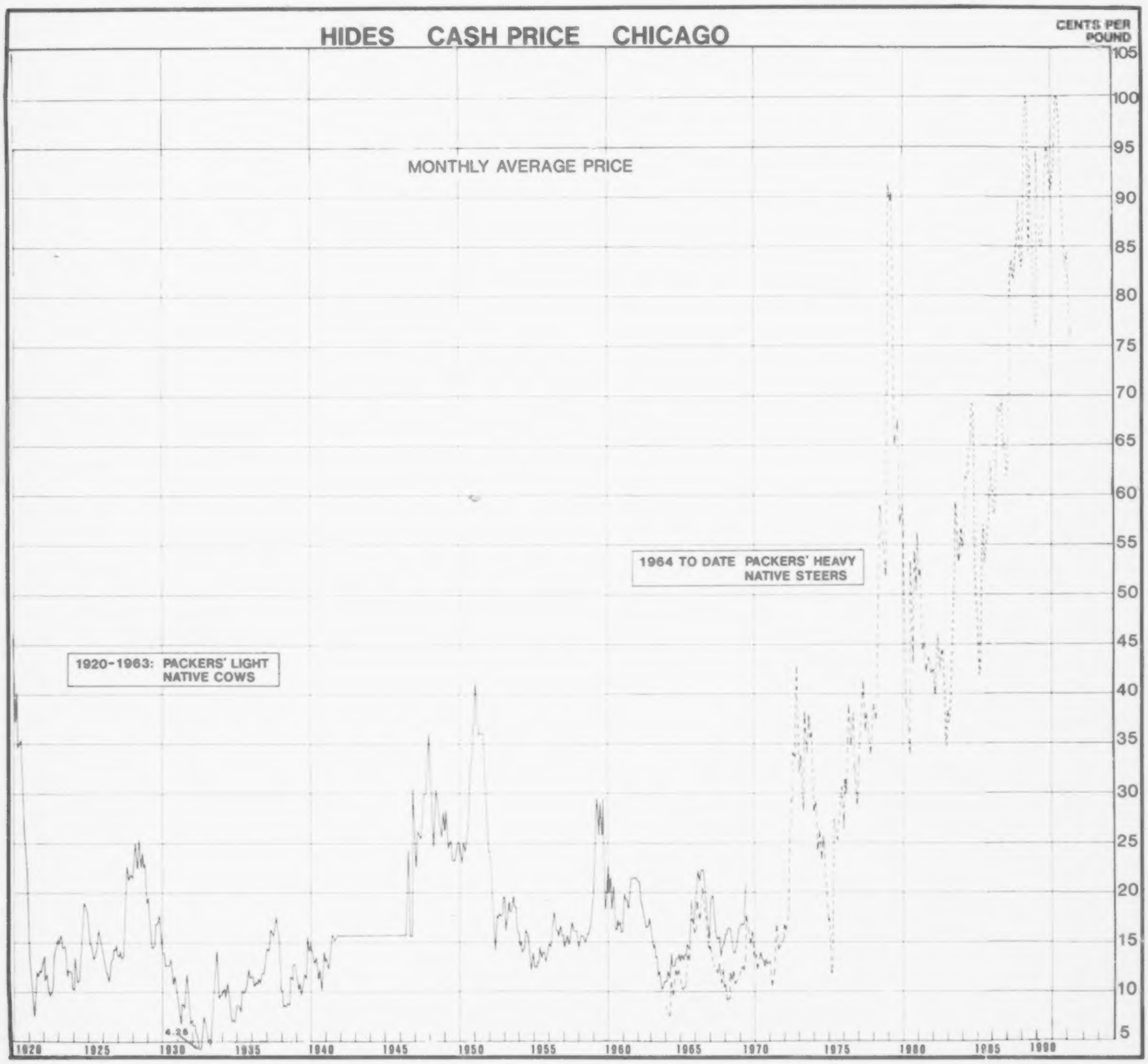
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1980	11.67	11.83	11.81	12.27	12.16	11.37	11.40	11.94	11.08	11.25	11.45	11.41	11.63
1981	11.67	11.93	12.52	12.72	13.09	13.16	13.01	13.14	13.22	12.90	12.67	12.58	12.52
1982	12.96	12.32	12.49	12.74	12.76	13.30	14.13	13.34	13.12	13.10	13.56	14.08	13.14
1983	12.88	13.72	13.18	13.54	14.20	13.57	12.91	14.14	14.06	15.02	14.69	15.55	13.96
1984	14.95	14.19	14.00	14.99	15.20	14.43	14.88	14.59	15.11	14.56	15.00	15.62	14.79
1985	15.24	14.97	14.10	14.87	14.86	15.35	14.24	14.55	14.12	13.71	13.56	15.13	14.56
1986	14.60	13.86	13.82	14.22	15.00	14.98	15.53	14.38	14.64	14.38	14.40	16.50	14.69
1987	15.09	14.58	14.05	15.15	15.89	15.63	16.47	15.60	15.63	15.23	15.89	17.96	15.60
1988	16.57	14.80	13.88	15.97	13.77	14.46	17.27	14.92	15.32	15.18	14.98	16.73	15.24
1989	15.94	15.35	15.00	16.90	15.77	16.45	16.36	17.17	17.38	17.20	17.73	18.68	16.66
1990[1]	18.66	18.79	19.36	19.50	19.59	19.69	20.33	21.48	20.83	21.57			

[1] Preliminary. *Source: Leather Industries of America* T.298

Wholesale Price of Hides (Packer Heavy Native Steers)—F.O.B. Chicago In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1982	42.3	40.5	41.4	44.5	46.0	42.8	43.3	44.5	44.5	44.5	42.7	38.8	43.0
1983	37.1	37.7	40.4	46.0	50.8	51.8	59.2	57.3	53.3	53.8	56.7	54.8	49.9
1984	54.8	56.0	62.0	61.7	64.5	64.7	66.5	69.2	68.9	61.7	52.5	47.9	60.9
1985	46.0	41.7	45.5	54.7	57.0	53.1	54.0	55.7	57.1	57.6	63.5	60.8	53.9
1986	57.7	58.4	57.7	63.1	68.6	68.7	68.3	69.9	64.5	65.9	65.2	61.8	64.2
1987	61.8	64.2	69.7	82.4	83.5	81.7	82.5	83.8	89.0	89.9	85.4	83.7	79.8
1988	82.9	86.3	97.4	100.0	99.2	87.6	84.2	93.7	87.3	80.5	77.1	76.7	87.7
1989	84.0	87.4	94.6	87.5	85.2	85.0	90.3	91.7	95.9	94.7	92.9	90.9	90.0
1990	92.7	92.8	95.5	100.0	99.6	97.9	96.7	91.7	87.5	84.6	83.0	84.4	92.2
1991	81.6	75.8											

Source: Wall St. Journal; CRB. T.296



Hogs

As 1990 drew to a close, there were indications that hog producers were cautiously expanding production. Earlier, concerns about a late corn crop and a sharp drop in hog prices in late summer had clouded the longer-term profit picture. However, producer fears dissipated when hog prices rebounded contraseasonally in September and corn prices eased, suggesting favorable returns for hog production in late 1990 and into most of 1991.

Hogs kept for breeding totaled 6.9 million head on September 1, 1990, about the same as a year earlier. Still, there were signs of an expansion taking hold. Producers planned to have 2 percent more sows farrow during Sept. 1990 to Feb. 1991 than in the same 1989-90 period. Moreover, pigs per litter continued to increase, with a record June-August total of 7.88 head. During the December 1989 to May 1990 period, pigs per litter averaged 7.9 head, up from the year-earlier average.

Ten states account for much of U.S. hog production, with Iowa the largest and Illinois second. As of September 1, the nation's inventory of hogs and pigs was put at 56.3 million head, 2 percent below a year earlier, but 4 percent above the June 1 inventory. Within the ten states, the inventory totaled 44.4 million head, down 2 percent from a year earlier. Iowa's inventory was 14.7 million head, up 1 percent, while Illinois had 5.7 million, down 7 percent.

Commercial pork production in 1990 totaled about 15.4 billion pounds, down 3 percent from 1989. Based on market hog inventories and farrowing intentions as of September 1, pork production in 1991 was expected to total 15.8 billion pounds, up 3 percent from 1990. Increased pork output was expected to lower hog prices from the mid-$50s per cwt. in 1990 to the low-to-mid $50s in 1991. Retail pork prices in 1991 were expected to increase by 3 percent from 1990, despite the larger supply.

Retail prices in August 1990 reached a record $2.25/lb., but moderated later. For 1990, retail prices averaged about $2.10, up from $1.83 in 1989.

U.S. pork imports in the first four months of 1990 amounted to 289 million pounds, 13 percent below the same 1989 period. Canada accounted for almost half of the total and Denmark for 84 million pounds. Total 1990 imports were expected to reach 945 million pounds, above 896 million in 1989. The U.S. imported 1.1 million live hogs from Canada in 1989, and a smaller total was expected for 1990.

The U.S. exports live hogs, mostly to Mexico, with the total in 1990 likely to be under 100,000 head, compared with 93,000 in 1989. U.S. pork exports go mostly to Japan, which in 1989 took more than half of the 268 million pounds shipped. For 1990, U.S. exports were estimated at 275 million pounds. Exports to Japan were expected to slow in 1991, as Taiwan regained the lead as that country's pork supplier.

Futures Markets

Live hog futures and options are traded on the Chicago Mercantile Exchange (CME). A smaller futures contract is also traded on the Mid America Commodity Exchange in Chicago.

World Hog Numbers in Specified Countries as of January 1 In Millions of Head

Year	Brazil	Canada	Denmark	France	W. Germany	Hungary	Italy	Japan	Mexico	Philippines	Poland	Spain	China[3]	Un. Kingdom	United States	USSR	World
1985	30.0	10.6	9.0	11.0	23.6	9.2	9.0	10.7	12.3	7.3	17.2	15.0	306.8	7.8	54.1	77.9	708.6
1986	30.5	10.0	9.1	11.0	24.3	8.3	9.1	11.1	13.1	7.3	19.2	15.8	331.4	7.9	52.3	77.8	735.2
1987	31.7	10.0	9.4	12.1	24.5	8.7	9.3	11.4	12.4	7.1	19.6	15.8	337.2	8.0	51.0	79.5	748.3
1988	31.7	10.7	9.0	11.9	23.7	8.2	9.4	11.7	10.9	7.6	19.4	16.9	327.7	7.9	54.4	77.4	741.7
1989	31.7	11.0	9.1	11.9	22.6	8.3	9.4	11.9	9.0	7.9	20.2	16.1	342.2	7.6	55.5	78.1	753.9
1990[1]	37.5	10.7	9.1	11.9	22.2	7.7	9.3	11.8	8.6	8.0	18.7	16.9	352.0	7.4	53.8	78.9	762.5
1991[2]	44.7	10.6	9.3	11.9	22.2	8.3	9.2	11.5	8.6	8.1	19.7	17.0	346.6	7.2	54.6	79.0	766.7

[1] Preliminary. [2] Forecast. [3] Mainland. *Source: Foreign Agricultural Service, U.S.D.A.* T.300

Salient Statistics of Pigs and Hogs in the U.S.

Year	Pig Crop					Value of Hogs on Farms, Dec. 1		Hog Marketings Ths. Head	Quantity Produced (Live Wt.) Mil. Lbs.	Value of Production Mil. $	Hogs Slaughtered In Thousand Head				
	Spring[2]		Fall[3]								Commercial				
	Sows Farrowed	Pigs Saved	Sows Farrowed	Pigs Saved	Total Pig Crop	$ Per Head	Total Million $				Federally Inspected	Other	Total	Farm	Total
	In Thousands of Head														
1985	5,571	42,545	5,667	43,484	86,029	69.60	3,640	86,694	20,164	8,871	81,974	2,519	84,492	446	84,938
1986	5,246	40,392	5,423	41,997	82,389	91.90	4,679	82,738	19,415	9,556	77,290	2,309	79,598	358	79,956
1987	5,560	43,356	5,814	44,991	88,347	76.10	4,158	83,857	20,408	10,424	78,913	2,168	81,081	341	81,422
1988	6,030	46,883	6,036	46,000	92,883	66.30	3,678	90,476	21,630	9,128	85,516	2,279	87,795	341	88,136
1989[1]	6,041	47,238	5,775	44,836	92,074	79.10	4,256				86,328	2,358	88,686		
1990[4]	5,742	45,307	5,698	44,780	90,087	85.40	4,657				84,000	2,000	86,000		
1991[4]	5,713	45,215													

[1] Preliminary. [2] December–May. [3] June–November. [4] Estimate. *Source: Statistical Reporting Service, U.S.D.A.* T.302

Hogs and Pigs on U.S. Farms on December 1 In Thousands of Head

Year	Georgia	Illinois	Indiana	Iowa	Kansas	Kentucky	Minnesota	Missouri	Nebraska	No. Carolina	Ohio	South Dakota	Tennessee	Wisconsin	Total
1981	1,520	6,450	4,100	16,300	1,770	1,040	4,300	3,400	4,100	1,980	2,050	1,710	900	1,380	58,698
1982	1,450	5,600	4,400	14,400	1,670	960	4,000	3,500	3,800	2,150	1,920	1,580	750	1,220	54,534
1983	1,350	5,400	4,200	15,000	1,650	1,000	4,400	3,600	4,000	2,350	2,200	1,730	950	1,280	56,694
1984	1,200	5,400	4,300	14,200	1,600	880	4,300	3,450	3,700	2,300	1,970	1,600	1,100	1,300	54,073
1985	1,150	5,400	4,150	13,500	1,520	800	4,100	3,050	3,900	2,350	1,980	1,610	950	1,250	52,314
1986	1,100	5,000	4,150	12,600	1,420	880	4,260	2,850	3,950	2,360	2,000	1,520	770	1,300	51,001
1987	1,175	5,400	4,600	14,100	1,470	900	4,500	3,000	4,050	2,550	2,150	1,560	820	1,320	54,384
1988	1,210	5,600	4,300	14,000	1,500	1,090	4,690	2,850	4,150	2,700	2,210	1,810	1,000	1,275	55,469
1989	1,200	5,700	4,350	13,500	1,450	975	4,450	2,700	4,200	2,570	2,080	1,720	700	1,150	53,821
1990[1]	1,100	5,700	4,300	14,000	1,500	920	4,500	2,800	4,300	2,800	2,000	1,770	620	1,200	54,562

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.*

T.301

Quarterly 10—U.S. State Hogs & Pigs Report In Thousands of Head

Year[2]	Inventory[1]	Breeding[1]	Market[1]	Farrowings	Pig Crop	Year	Inventory[1]	Breeding[1]	Market[1]	Farrowings	Pig Crop
1987	39,730	5,125	34,605	8,853	68,955	1989[3]	43,210	5,335	37,875	9,203	71,807
I	39,730	5,110	34,580	1,916	14,840	I	43,210	5,335	37,875	2,109	16,439
II	38,370	5,215	33,155	2,352	18,601	II	41,655	5,440	36,215	2,580	20,309
III	40,995	5,340	35,615	2,284	17,692	III	44,020	5,565	38,455	2,324	18,167
IV	43,150	5,310	37,840	2,266	17,572	IV	45,200	5,335	39,865	2,190	16,890
1988[3]	42,675	5,435	37,240	9,370	72,268	1990[3]	42,200				
I	42,675	5,435	37,485	2,123	16,489	I	42,200	5,280	36,920	2,013	15,748
II	41,345	5,555	35,825	2,578	20,175	II	40,190	5,250	34,940	2,458	19,576
III	44,065	5,630	38,435	2,358	18,000	III	42,800	5,440	37,360	2,266	17,922
IV	45,000	5,460	39,540	2,301	17,520	IV	44,410	5,340	39,070	2,252	

[1] Beginning of period. [2] Quarters are Dec. preceding year—Feb. (I), Mar.–May (II), June–Aug. (III), & Sept.–Nov. (IV). [3] Preliminary. *Source: Crop Reporting Board, U.S.D.A.*

T.181a

U.S. Federally Inspected Hog Slaughter In Thousands of Head

Week ended	1987	1988	1989	1990	Week ended	1987	1988	1989	1990
Jan. 6[1]	1,683	1,726	1,419	1,337	July 7	1,360	1,330	1,244	1,191
13	1,659	1,766	1,719	1,763	14	1,345	1,537	1,557	1,461
20	1,527	1,605	1,679	1,674	21	1,354	1,542	1,518	1,430
27	1,500	1,543	1,647	1,634	28	1,330	1,456	1,501	1,361
Feb. 3	1,455	1,535	1,631	1,647	Aug. 4	1,372	1,528	1,543	1,463
10	1,502	1,545	1,656	1,656	11	1,445	1,571	1,612	1,471
17	1,395	1,542	1,678	1,677	18	1,404	1,513	1,615	1,607
24	1,533	1,595	1,665	1,624	25	1,475	1,563	1,610	1,606
Mar. 3	1,556	1,610	1,621	1,713	Sept. 1	1,548	1,607	1,713	1,641
10	1,578	1,674	1,716	1,605	8	1,363	1,517	1,545	1,440
17	1,574	1,639	1,703	1,707	15	1,709	1,807	1,888	1,747
24	1,504	1,631	1,601	1,631	22	1,621	1,868	1,853	1,722
31	1,529	1,599	1,648	1,578	29	1,658	1,803	1,785	1,676
Apr. 7	1,553	1,573	1,761	1,661	Oct. 6	1,640	1,830	1,810	1,695
14	1,468	1,655	1,780	1,642	13	1,720	1,838	1,810	1,628
21	1,393	1,660	1,813	1,594	20	1,664	1,845	1,797	1,665
28	1,453	1,695	1,764	1,594	27	1,763	1,895	1,739	1,624
May 5	1,475	1,654	1,732	1,579	Nov 3	1,792	1,908	1,812	1,662
12	1,440	1,634	1,654	1,586	10	1,778	1,827	1,791	1,760
19	1,448	1,577	1,632	1,528	17	1,772	1,920	1,901	1,768
26	1,232	1,533	1,618	1,523	24	1,463	1,562	1,564	1,480
June 2	1,385	1,323	1,343	1,236	Dec. 1	1,845	1,956	1,908	1,841
9	1,372	1,489	1,589	1,460	8	1,879	1,887	1,832	1,814
16	1,341	1,513	1,589	1,452	15	1,729	1,800	1,716	1,825
23	1,356	1,503	1,533	1,472	22	1,150	1,668	1,521	1,763
30	1,193	1,537	1,500	1,402	29	1,458	1,420	1,443	1,252

[1] Corresponding dates—1987: Jan. 10, 1988: Jan. 9, 1989: Jan. 7 *Source: Economic Research Service, U.S.D.A.*

T.181b

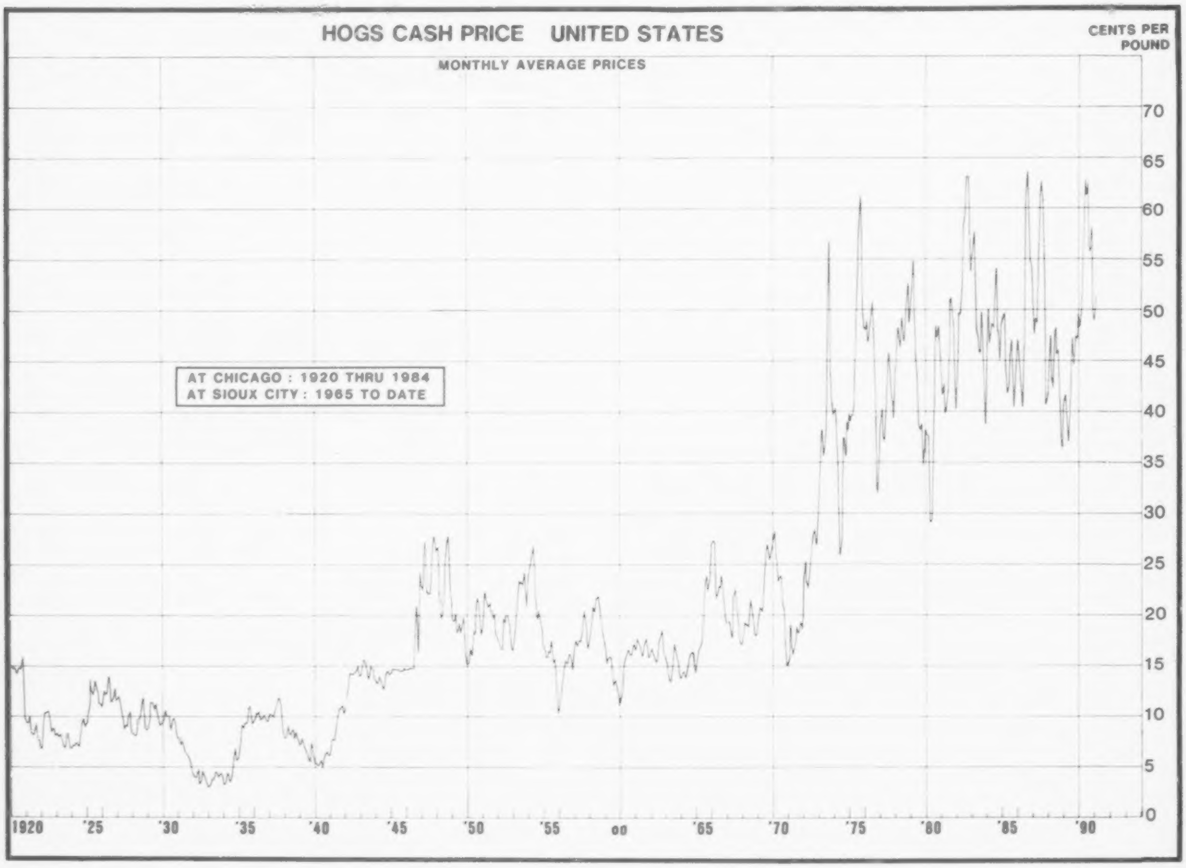
HOGS

High, Low & Closing Prices of June Live Hogs Futures at Chicago In Cents per Pound

Year of Delivery	Year Prior to Delivery									Delivery Year						Life of Delivery Range
	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1986 High	48.95	48.65	49.00	47.60	44.40	43.75	43.97	44.70	46.45	47.00	45.50	45.90	46.87	50.10	59.72	59.72
Low	47.55	46.80	46.90	41.75	40.05	39.80	42.25	42.20	43.25	43.65	42.10	42.05	40.25	45.52	49.75	39.80
Close	48.70	48.25	47.75	43.57	40.82	43.00	42.65	44.65	45.85	45.27	42.80	43.82	46.60	49.77	59.65	—
1987 High	43.30	44.75	46.67	48.00	49.50	59.20	49.40	48.70	49.10	47.85	48.25	48.85	54.80	58.85	64.10	64.10
Low	39.90	39.90	40.60	43.80	46.10	41.20	46.00	45.45	45.50	44.90	44.60	45.60	46.45	52.60	57.85	37.50
Close	40.97	40.85	44.95	47.45	47.45	48.25	46.70	48.47	45.62	47.82	45.50	47.82	53.47	58.17	64.00	—
1988 High	41.50	43.00	43.72	44.65	45.05	45.30	44.50	43.15	42.70	49.17	50.35	51.65	52.15	54.95	54.70	54.95
Low	38.50	40.65	40.70	42.15	43.65	42.72	41.25	41.35	40.25	41.90	46.65	45.57	48.10	48.90	48.30	37.50
Close	40.95	42.45	41.20	44.55	44.70	43.30	41.82	41.85	42.00	46.95	46.65	49.30	48.80	54.77	50.45	—
1989 High	44.60	46.80	56.25	54.80	50.10	49.90	49.35	48.95	50.50	50.80	48.67	49.22	47.20	49.30	49.40	56.25
Low	42.50	44.35	46.75	46.90	47.20	46.70	47.60	45.50	46.85	46.60	46.17	45.95	44.67	46.45	46.90	42.50
Close	44.40	46.70	54.20	47.52	47.27	49.10	48.40	47.05	49.57	48.15	48.20	46.47	46.62	47.92	49.15	—
1990 High	47.70	48.15	48.70	47.75	46.20	47.50	48.20	50.67	49.90	53.62	55.10	57.85	63.70	67.45	66.85	67.45
Low	46.90	46.40	46.75	44.75	44.25	45.20	46.50	47.55	46.90	48.25	51.50	54.00	57.10	62.80	59.75	44.25
Close	47.37	47.60	48.60	44.80	45.87	47.40	47.75	49.42	48.62	52.42	54.85	57.02	63.12	65.50	60.50	—
1991 High	51.70	51.85	51.45	51.30	51.20	51.00	52.95	53.75	52.15	56.10						
Low	50.45	50.50	48.65	49.10	47.70	48.45	50.30	49.20	48.60	50.75						
Close	51.00	50.50	48.77	51.30	48.70	49.85	50.77	50.05	51.37	54.62						

Source: Chicago Mercantile Exchange

T.308



Average Wholesale Price of Hogs, Average (All Weights) at Sioux City In Dollars Per 100 Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	45.60	43.80	41.08	40.59	46.43	54.95	61.59	63.66	59.59	54.86	54.44	52.02	50.73
1987	47.56	49.08	48.67	52.10	55.79	61.37	62.69	60.56	55.19	49.28	40.74	41.56	47.11
1988	44.59	47.45	43.19	42.28	47.75	48.26	45.60	45.98	41.28	38.92	36.52	40.58	43.25
1989	41.64	41.11	39.88	37.22	42.40	46.24	47.26	47.04	44.58	47.49	47.21	49.65	43.91
1990	48.41	49.48	52.56	54.63	62.80	61.34	62.54	56.37	55.64				

Source: Department of Agriculture T.307

Average Price Received by Farmers for Hogs in the U.S. In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average[1]
1986	44.30	42.80	40.40	39.70	45.80	52.60	59.00	62.10	58.30	53.10	52.80	50.60	50.10
1987	47.20	48.20	47.40	50.80	54.40	59.20	59.60	58.60	54.30	48.90	40.60	40.30	50.80
1988	43.00	45.80	42.20	41.90	46.30	47.10	44.10	44.70	40.70	38.70	36.20	39.70	42.50
1989	40.90	40.40	39.30	36.90	41.60	45.10	45.90	45.60	43.40	46.60	45.00	48.20	43.30
1990[2]	47.30	48.20	51.30	53.80	61.20	60.10	60.80	55.90	54.30	56.80	50.20	47.80	54.00

[1] Weighted average by quantities sold. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.306

Hog-Corn Price Ratio[1] at Omaha

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986[2]	19.0	19.0	17.6	17.2	19.5	22.4	30.3	39.3	42.9	39.0	34.7	33.4	27.8
1987[2]	32.7	35.1	32.6	32.7	31.6	34.3	38.4	41.3	36.3	31.0	24.3	23.8	32.8
1988[2]	25.0	25.7	23.0	22.5	24.3	18.9	16.8	17.8	15.9	14.9	14.7	16.2	19.6
1989[2]	16.4	16.3	15.4	14.8	16.8	18.5	19.6	20.9	19.8	20.8	20.1	21.7	18.4
1990[2]	21.6	22.0	21.9	21.2	23.6	22.4	23.9	23.1	25.1	27.0	23.2	22.0	23.1

[1] Ratio computed by dividing average price packer and shipper purchases of barrows and gilts by average price No. 2 yellow corn both at Omaha. This ratio represents the number of bushels of corn required to buy 100 pounds of live hogs. [2] Preliminary.
Source: Crop Reporting Board, U.S.D.A. T.304

Cold Storage Holdings of Frozen Pork[1] in the U.S. on First of Month In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1986	229.4	235.4	239.1	253.5	282.0	275.6	247.7	214.9	184.7	185.9	215.8	206.2
1987	197.1	217.7	228.5	221.8	217.8	218.8	189.2	181.1	175.1	186.2	212.2	251.7
1988	285.5	291.5	308.2	345.8	397.3	388.6	362.8	337.2	287.0	288.0	320.8	361.3
1989	357.9	380.5	393.4	393.1	432.4	431.3	380.1	343.1	278.1	278.9	275.8	279.2
1990[2]	256.3	272.4	308.3	297.7	314.7	322.7	292.6	256.4	224.7	225.8	231.9	222.1

[1] Excludes lard. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.303

Federally Inspected Hog Slaughter in the United States In Thousands of Head

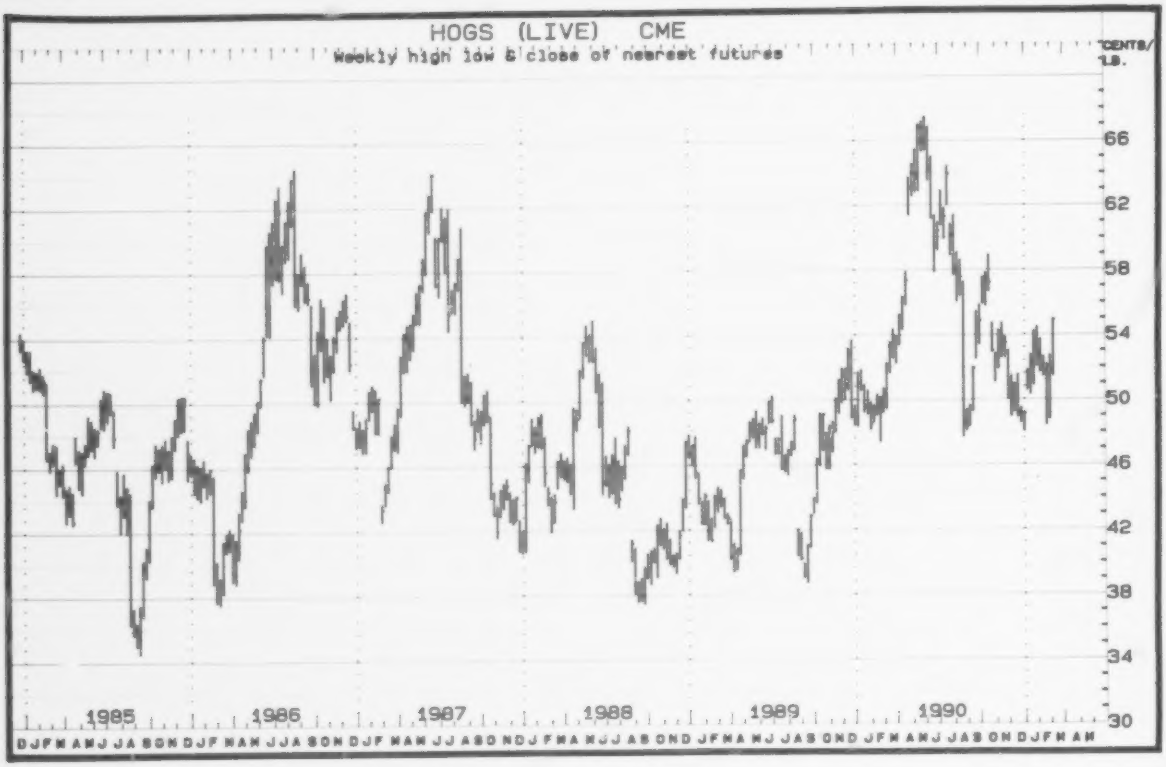
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1986	6,968	6,158	6,662	7,160	6,703	5,894	5,918	5,799	6,323	7,083	6,064	6,558	77,290
1987	6,723	5,886	6,787	6,492	5,922	5,987	6,019	6,019	6,855	7,519	7,121	7,583	78,913
1988	6,803	6,518	7,505	6,929	6,713	6,715	6,199	7,101	7,534	7,887	7,908	7,703	85,516
1989[1]	7,116	6,619	7,569	7,199	7,277	6,881	6,131	7,392	7,493	7,823	7,815	7,012	86,328
1990[1]	7,407	6,643	7,279	6,785	6,799	6,152	5,938	7,110	6,722	7,546	7,336		

[1] Preliminary. *Source: Statistical Reporting Service, U.S.D.A.* T.305

Average Live Weight of All Hogs Slaughtered Under Federal Inspection In Pounds Per Head

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average[1]
1986[2]	246	244	244	245	246	245	245	244	245	248	250	252	246.2
1987[2]	251	248	246	247	247	248	246	244	246	249	252	250	247.8
1988[2]	248	247	247	249	250	250	249	247	248	251	253	251	249.2
1989[2]	249	247	247	251	251	251	247	247	246	248	251	250	248.8
1990[2]	249	248	249	250	251	252	249	249	247	250	253		

[1] Average is weighted by federally inspected slaughter. [2] Preliminary. *Source: Department of Agriculture* T.311



Average Open Interest of Live Hogs Futures at Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1982	23,133	29,322	37,186	47,986	57,124	56,039	43,691	47,839	52,468	49,044	49,938	44,542
1983	47,316	44,412	41,019	36,564	33,103	31,593	27,269	30,683	34,621	31,472	30,666	30,323
1984	33,760	32,849	34,212	33,930	35,009	33,006	27,643	23,016	22,755	20,871	24,145	23,141
1985	26,589	29,408	27,125	24,248	24,019	23,545	20,878	18,894	19,799	21,567	27,843	24,852
1986	22,480	21,273	19,769	17,522	23,209	25,855	30,480	31,697	34,611	28,256	30,491	27,062
1987	26,275	28,125	30,794	30,195	32,431	32,889	30,752	31,553	34,197	28,562	25,138	24,440
1988	26,681	30,532	31,329	28,156	31,801	31,221	27,466	26,476	31,507	30,092	34,251	31,458
1989	31,923	30,853	29,014	30,414	29,646	27,353	25,375	25,345	28,308	33,936	35,913	29,693
1990	30,335	31,018	37,789	39,257	47,291	43,631	32,942	29,964	26,982	25,691	27,648	25,757
1991	22,742											

Source: Chicago Mercantile Exchange T.309

Volume of Trading of Live Hogs Futures at Chicago In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	178.7	195.6	262.6	222.6	288.0	408.3	300.1	344.5	347.2	383.4	324.9	305.1	3,561.0
1983	291.6	254.7	213.8	230.6	254.1	262.1	217.4	279.9	220.8	174.2	197.5	194.2	2,790.7
1984	232.2	212.7	243.8	172.3	211.0	192.6	189.2	143.9	109.1	140.7	181.0	140.5	2,169.0
1985	155.0	128.3	160.2	141.7	156.2	141.9	134.7	120.2	136.1	156.8	145.2	143.5	2,719.9
1986	156.3	108.5	113.7	153.6	157.4	160.8	224.3	168.8	196.5	183.4	171.0	142.5	1,936.7
1987	159.2	138.5	172.7	190.3	189.7	212.1	219.5	169.8	174.0	175.5	121.1	118.0	2,040.5
1988	172.9	143.0	172.4	137.6	169.6	267.0	171.4	140.3	160.7	150.3	166.8	156.7	2,008.8
1989	188.2	135.0	152.8	130.7	175.2	147.5	141.9	131.8	149.6	181.5	205.9	151.6	1,891.9
1990	181.0	119.9	189.7	188.8	278.3	277.0	212.5	170.4	147.0	160.3	186.1	130.4	2,241.3
1991	177.9												

Source: Chicago Mercantile Exchange T.310

Honey

Honey output in ten major producing countries in 1990 was forecast at 750,500 tonnes, up 3 percent from 1989, according to the USDA. These countries accounted for about 65 percent of world honey production. Exports by the ten producing countries were expected to decline by 1 percent in 1990, while their imports were likely to increase by 4 percent. West Germany was the world's major importer, while China ranked as the number one exporter.

Consumption in the ten major producing nations was expected to rise by 42,015 tonnes or 6 percent in 1990. Japan and the USSR were likely to account for 10 percent and 34 percent of total utilization, respectively.

The U.S. was forecast to produce about 82,000 tonnes of honey in 1990, or 7 percent more than in 1989. Imports were likely to grow by 8 percent to 38,000 tonnes in 1990, while exports were slated to fall by 18 percent to 3,700 tonnes. In 1989, the U.S. imported the bulk of its honey from four countries: Canada (35 percent), China (32 percent), Argentina (14 percent), and Mexico (9 percent). During that year, Saudi Arabia, West Germany, Japan, and Canada were the major markets for U.S. honey, respectively taking 26 percent, 17 percent, 10 percent, and 7 percent of U.S. exports.

In 1990, the price of domestically produced honey was supported through a nonrecourse loan program with a national loan rate of 53.77 cents per pound. Support loans provide beekeepers interim financing to assist them in marketing their honey crops in an orderly manner. This provides market stability and encourages maintenance of bee populations, which are vital for pollination of important seed, fruit, and vegetable crops.

If a producer is unwilling or unable to redeem a honey loan, the producer may forfeit the honey collateral to the government in satisfaction of the loan. All loans mature no later than nine months after the month in which the application was made.

World Production of Honey In Thousands of Metric Tons

Year	Argentina	Australia	Brazil	Canada	China	Ethiopia	France	West Germany	Japan	Mexico	Poland	Spain	Turkey	United States	U.S.S.R.	World Total
1978	35.0	18.6	16.0	30.6	75.0	20.0	9.5	15.0	8.5	54.0	12.0	11.0	21.7	104.5	179.0	827.7
1979	30.0	25.0	18.0	32.9	110.0	20.0	14.4	9.9	7.5	52.0	13.0	12.0	23.7	107.8	189.0	880.1
1980	33.0	19.5	20.0	29.2	81.0	20.5	12.0	13.5	6.2	60.0	10.0	13.0	23.0	90.6	183.0	837.4
1981	30.0	24.8	24.0	32.9	110.0	21.0	10.0	14.0	6.0	60.0	10.0	13.0	23.0	84.3	184.0	873.8
1982	33.0	22.4	25.0	30.5	136.0		25.0	18.0	7.4	45.0				104.3	186.0	908.8
1983	30.0	25.0	25.0	38.8	143.3			19.0	6.9	68.0				93.0	210.0	970.0
1984	35.0	28.0	25.0	43.3	140.0			16.0	6.8	60.0				75.0	193.0	622.1[2]
1985	45.0	26.9	28.0	36.1	150.0			11.0	7.2	56.0				68.0	204.0	632.2[2]
1986	36.0	25.1	27.0	34.0	160.0			16.0	5.6	54.0				90.9	210.0	658.6[2]
1987	44.0	28.0	30.5	39.8	204.0			16.0	6.0	47.9				102.9	219.2	738.3[2]
1988	46.0	27.6	36.0	37.1	156.0			18.0	4.9	46.1				97.1	243.0	711.9[2]
1989[1]	40.0	26.0	38.0	28.1	189.0			29.0	5.3	48.5				76.8	249.0	729.8[2]
1990[1]	39.0	28.2	42.3	31.0	180.0			23.0	5.5	49.5				82.0	270.0	750.5[2]

[1] Preliminary. [2] *Only* for countries listed *Source: Foreign Agricultural Service, U.S.D.A.* T.312

Salient Statistics of Honey in the United States

									Program Activity					
Year	Number of Colonies Thous.	Yield Per Colony Lbs.	Total U.S. Production	Domestic Disapp.	Imports For Consumption	Domestic Exports	Stocks Jan. 1	Placed Under Loan	CCC Take Over	Net Gov't[3] Expenditure — Mil. $ —	Domestic Avg. Price All Honey	National Average Price Support	Per Capita Consumption Lbs.
			In Millions of Pounds								¢ Lb.		
1978	4,081	56.7	231.5	277.3	56.0	8.0	30.0	40.5	0	3.5	54.5	36.8	1.25
1979	4,155	57.4	238.7	282.7	58.6	8.8	32.2	49.1	0	−1.7	59.0	43.9	1.26
1980	4,140	48.3	199.8	226.2	49.0	8.5	38.0	41.1	6.0	8.7	61.4	50.3	.99
1981	4,213	44.1	185.9	232.0	77.3	9.2	52.1	55.2	35.2	8.4	63.2	57.4	1.01
1982	4,250	54.1	230.0	250.8	92.0	8.5	74.1	88.4	74.5	27.4	56.8	60.4	1.08
1983	4,275	48.0	205.0	278.9	109.8	7.5	136.8	113.6	106.4	48.0	54.4	62.2	1.19
1984	3,200	38.4	165.1		128.7	7.5	165.2	107.5	105.8	90.2	50.0	65.8	1.0
1985	4,325	34.7	150.1	257.1	138.2	6.5	191.2	102.0	98.0	80.8	47.5	65.3	1.0
1986	3,205	62.0	200.4	283.0	120.0	9.2	255.2	155.2	52.8	89.4	51.1	64.0	1.0
1987	3,190	71.1	226.8	321.2	58.3	12.4	234.9	172.6	78.6	72.6	50.3	61.0	1.0
1988[1]	3,219	66.5	214.1	286.8	55.9	14.1	204.0	249.8	55.9	100.1	50.0	59.1	1.0
1989[2]	3,311	51.1	169.3	281.2	77.3	9.9	159.5	173.3	47.7	41.7	48.4	56.4	1.0
1990[2]	3,322	54.4	180.8	285.8	83.8	8.2	130.1					53.8	.9

[1] Preliminary. [2] Forecast. [3] Fiscal Year. *Source: Crop Reporting Board, U.S.D.A.* T.313

Interest Rates

The Fed's concern about stubbornly high U.S. inflation during 1990, even before Iraq invaded Kuwait on August 2, kept monetary policy relatively tight for the year, despite a slowing economy. The M1 money supply (currency in circulation and checking accounts) grew at a 4.5 percent annual rate through the first six months of 1990. M2 (which includes M1, money market accounts and small time deposits) increased at a 3.9 percent rate.

In July, revisions to the U.S. National Income and Product Accounts indicated real GNP grew only 1.3 percent from second-quarter 1989 through second-quarter 1990. Meanwhile, the core inflation rate appeared to have risen to about 5.5 percent from 4.5 percent a year earlier. Nevertheless, on July 13, the Fed eased monetary policy, cutting the fed funds rate by 25 basis points to 8 percent. In his Humphrey-Hawkins testimony a week later, Fed Chairman Alan Greenspan said the easing was meant to offset the effects of tightened lending standards by nervous commercial bankers. He also said that further easing might be needed to offset a commercial credit crunch.

The Fed's second-half 1990 annual growth target range for M2 was 3 percent to 7 percent. Though the Fed eased five additional times and cut the discount rate by 50 basis points to 6.5 percent on December 19, the weakening economy prevented the cuts from stimulating commercial lending. The major banks did not cut their prime rates to 9.5 percent until January 1991, a year after the previous prime rate cut, although commercial lending volume had dropped sharply.

As the yield curve chart in this section shows, the year began with rates at just under 8 percent for all maturities. However, as the year progressed and the Fed eased, the curve turned positive. For the 30-year bond, yields ended at 8.24 percent, while the yield on 2-year notes fell to 7.13 percent.

Concern about the safety of the banking system supported Treasury bill prices late in the year, as nervous savers moved funds from certificates of deposit into government-only money market funds. T-bills also benefited from fight-to-safety buying in response to the Kuwait crisis. Unlike the reaction to the oil price shocks in 1973 and 1979, this time there was no attempt by the Fed to monetize the effects of higher oil prices. Instead, preliminary data indicate M2 actually declined during the fourth quarter, even though the Fed kept its promise to cut interest rates after the Bush Administration and Congress passed a budget agreement that included tax increases.

Futures Markets

A futures contract now exists for virtually every maturity on the Treasury yield curve and for municipal and commercial credit risks. The major U.S. contracts include: Eurodollar CDs and T-bills on the Chicago International Monetary Market, and T-bonds, T-notes and municipal bonds on the Chicago Board of Trade. The London International Financial Futures Exchange (LIFFE) had active contracts on British government bonds, which are called gilts, and German government bonds, called Bunds. In November 1990, Germany's first futures market, the Deutsche Terminborse (DTB) in Frankfurt, began trading Bunds. While German interest rates rose sharply in 1990, with the Deutsche mark's appreciation a dollar-based investor in Bunds would have received a total return of nearly 15 percent for the year.

U.S. Producer Commodity Price Index (Wholesale, All Commodities) 1982 = 100

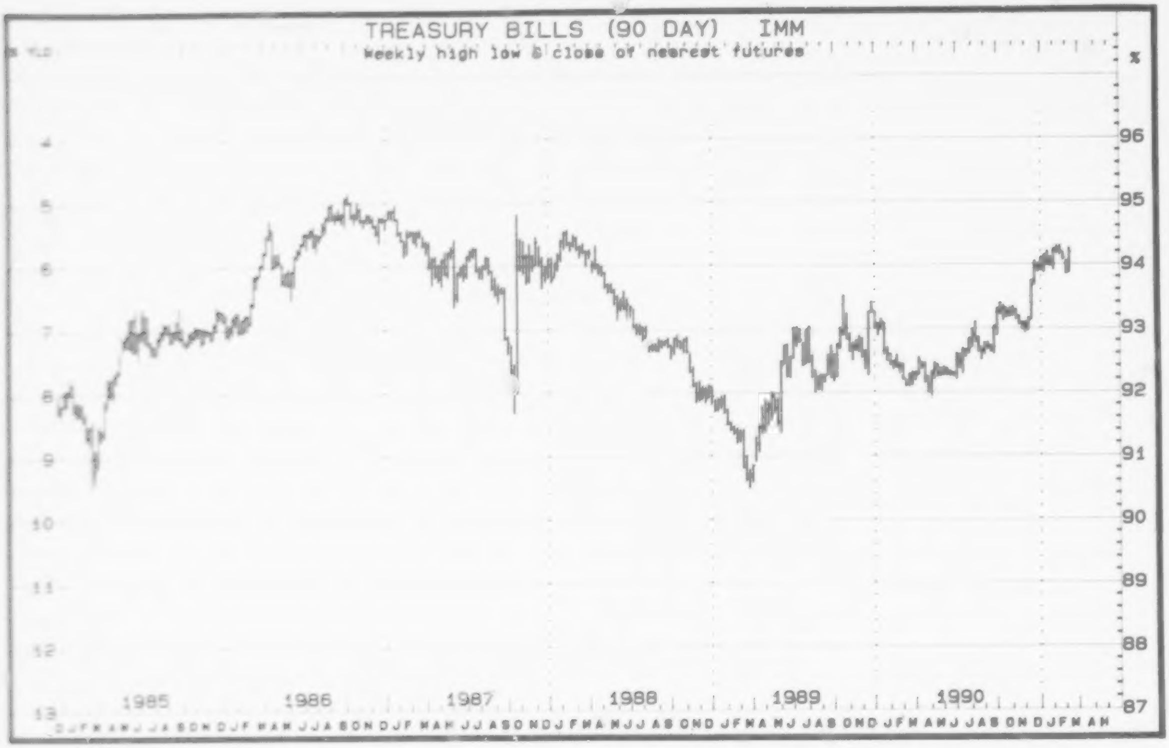
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	102.9	103.2	103.9	104.0	104.1	104.0	104.2	103.8	103.4	103.4	103.7	103.5	103.7
1985	103.4	103.3	103.1	103.3	103.5	103.3	103.2	102.7	102.1	102.9	103.4	103.6	103.2
1986	103.2	101.7	100.3	99.6	100.0	99.9	99.4	99.3	99.4	99.7	99.8	99.7	100.2
1987	100.5	101.0	101.2	101.9	102.6	103.0	103.5	103.8	103.7	104.1	104.2	104.2	102.8
1988	104.6	104.8	104.9	105.8	106.5	107.2	107.9	108.0	108.1	108.2	108.3	109.0	106.9
1989[1]	110.5	110.8	111.5	112.3	113.2	112.9	112.8	112.0	112.3	112.7	112.7	113.0	112.2
1990[1]	114.9	114.4	114.2	114.1	114.6	114.3	114.5	116.5	118.3	120.8	120.1	118.6	116.3

[1] Preliminary. *Source: Bureau of Labor Statistics* T.315

U.S. Consumer Price Index (Retail Price Index for All Items: Urban Consumers) 1982–84 = 100

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	101.9	102.4	102.6	103.1	103.4	103.7	104.1	104.5	105.0	105.3	105.3	105.3	103.9
1985	105.5	106.0	106.4	106.9	107.3	107.6	107.8	108.0	108.3	108.7	109.0	109.3	107.6
1986	109.6	109.3	108.8	108.6	108.9	109.5	109.5	109.7	110.2	110.3	110.4	110.5	109.6
1987	111.2	111.6	112.1	112.7	113.1	113.5	113.8	114.4	115.0	115.3	115.4	115.4	113.6
1988	115.7	116.0	116.5	117.1	117.5	118.0	118.5	119.0	119.8	120.2	120.3	120.5	118.3
1989[1]	121.1	121.6	122.3	123.1	123.8	124.1	124.4	124.6	125.0	125.6	125.9	126.1	124.0
1990[1]	127.4	128.0	128.7	128.9	129.2	129.9	130.4	131.6	132.7	133.5	133.8	133.8	130.7

[1] Preliminary. *Source: Bureau of Labor Statistics* T.316



Average Open Interest of 13 Wk.[1] Treasury Bill Futures in Chicago In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981	44,158	42,982	35,939	29,695	31,495	36,427	42,853	46,297	38,106	34,350	37,361	34,174
1982	33,765	33,854	37,029	41,262	49,754	43,235	48,025	60,055	55,414	48,690	4[illegible],006	49,035
1983	48,730	47,608	39,257	42,777	44,259	42,574	43,574	44,782	42,656	49,731	51,947	45,577
1984	44,814	50,417	47,490	51,299	58,668	47,626	45,713	43,931	42,313	42,337	48,923	42,866
1985	47,022	47,171	40,954	40,069	39,624	33,712	35,817	37,911	35,473	36,887	40,830	35,963
1986	37,365	43,008	48,572	51,145	43,394	36,479	40,676	40,819	37,532	36,107	37,940	36,271
1987	40,710	48,375	39,691	35,671	32,202	23,431	24,077	25,454	20,539	26,014	24,222	20,989
1988	19,571	22,956	21,460	26,134	28,166	19,081	21,812	21,626	21,374	21,930	24,711	26,923
1989	29,023	26,612	25,672	20,433	21,864	19,934	20,950	22,687	25,216	29,118	34,224	33,469
1990	39,168	38,358	27,668	31,274	25,128	21,171	26,[illegible]24	37,903	35,723	46,974	53,284	50,146
1991	55,371											

[1] 90-day U.S. Treas. Bill. *Source: International Monetary Market (Chicago)*

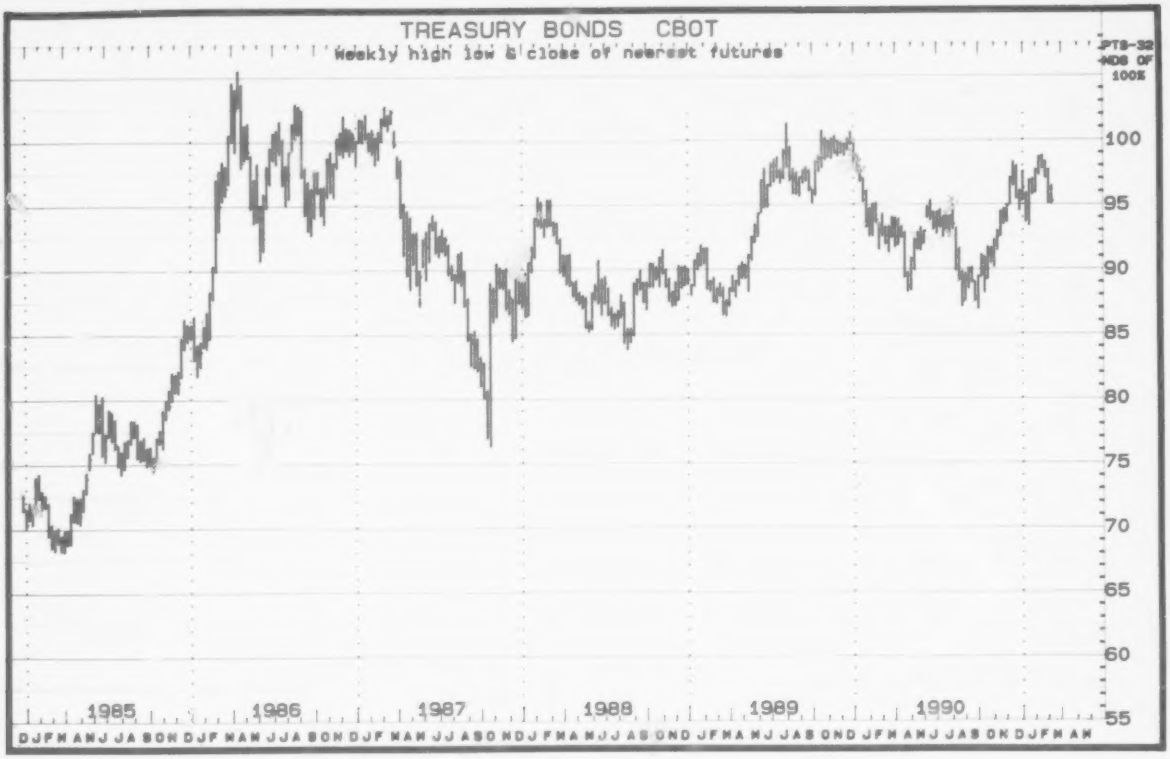
T.322

Volume of Trading of 13 Wk.[1] Treasury Bill Futures in Chicago In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	446.6	414.4	408.5	407.6	426.1	511.0	487.8	482.0	525.8	516.0	509.5	496.5	5,631.3
1982	503.5	465.5	638.7	529.1	595.4	546.0	615.2	738.4	628.6	521.4	442.4	374.7	6,598.8
1983	302.2	337.9	361.4	308.5	331.4	366.2	283.9	371.1	273.5	309.8	275.7	268.5	3,790.0
1984	200.0	213.4	304.9	300.2	489.1	342.8	315.1	242.5	201.6	203.6	264.0	215.5	3,293.0
1985	231.3	245.4	314.5	217.9	206.2	205.6	180.6	165.8	206.8	159.9	142.1	138.1	2,413.0
1986	175.0	215.4	149.5	212.8	169.7	152.9	117.8	135.7	160.8	114.2	106.3	105.1	1,815.2
1987	137.9	218.8	151.8	197.6	207.8	125.5	97.5	125.4	110.1	262.2	161.0	131.6	1,927.0
1988	103.2	111.6	129.2	125.6	163.4	105.3	84.3	117.9	97.9	101.6	129.1	104.5	1,373.6
1989	109.6	146.5	143.2	119.2	126.3	101.4	89.3	126.9	135.9	149.1	130.1	124.9	1,502.4
1990	169.3	153.6	118.5	120.3	102.4	96.7	138.1	206.6	168.9	178.5	223.7	193.1	1,869.6
1991	252.9												

[1] 90-day U.S. Treas. Bill. *Source: International Monetary Market (Chicago)*

T.323



Average Open Interest of Treasury Bond Futures in Chicago In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1982	210,528	207,766	185,227	190,176	195,945	166,256	157,216	167,606	164,364	164,761	[illegible]	178,211
1983	172,930	165,131	148,170	148,017	141,917	140,684	157,193	155,511	148,115	166,725	[illegible]	186,063
1984	174,827	163,119	168,705	168,980	193,248	198,144	[illegible]	205,630	209,920	223,808	244,596	217,550
1985	196,826	223,282	224,553	215,742	224,351	[illegible]	[illegible]	229,284	229,382	279,083	315,082	307,137
1986	320,040	317,197	266,005	253,991	237,236	[illegible]	[illegible]	207,524	196,672	223,588	241,717	239,695
1987	256,822	286,198	237,005	285,491	297,998	[illegible]	[illegible]	303,192	336,976	383,640	337,855	293,160
1988	296,133	[illegible]	[illegible]	317,891	366,723	[illegible]	[illegible]	489,339	475,841	478,585	472,628	411,888
1989	395,874	366,704	[illegible]	308,850	330,016	312,318	325,851	321,493	283,133	301,719	355,555	314,252
1990	315,671	324,954	[illegible]	280,745	303,544	278,889	285,934	317,197	297,075	286,291	288,581	254,775
1991	257,229											

Source: Chicago Board of Trade

T.317

Volume of Trading of Treasury Bond Futures in Chicago In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	1,266.4	1,306.1	1,413.9	1,259.4	1,408.2	1,254.8	1,145.5	1,669.5	1,474.4	1,644.0	1,545.2	1,352.3	16,739.7
1983	1,333.9	1,447.8	1,600.4	1,262.9	1,679.2	1,704.8	1,579.0	2,312.7	1,605.7	1,839.4	1,687.0	1,497.8	19,551
1984	1,475.7	1,891.3	[illegible]	2,068.7	3,373.8	2,593.9	2,691.7	2,792.2	2,556.6	2,924.2	2,781.2	2,184.9	29,963
1985	2,974	3,250	2,906	2,272	3,339	3,755	3,308	3,409	3,149	3,558	4,118	3,965	40,448
1986	4,640	5,220	4,445	5,115	[illegible]	4,486	4,114	4,175	4,638	3,853	3,595	3,534	52,599
1987	4,188	4,308	4,128	7,110	6,120	5,518	4,839	6,185	7,769	7,388	4,861	4,428	66,841
1988	5,550	5,765	6,088	4,984	5,570	7,495	5,133	6,346	5,641	6,136	6,431	[illegible]	70,307
1989	5,806	6,300	5,605	4,858	6,673	7,995	5,231	7,640	4,792	6,329	5,828	[illegible]	70,303
1990	7,215	[illegible]	7,175	5,653	6,189	5,279	4,895	8,855	4,939	6,659	6,570	4,691	75,559
1991	5,804												

Source: Chicago Board of Trade

T.319

High, Low & Closing Prices of June 5-Yr. T-Notes Futures in Chicago In 64ths of 100%

Year of Delivery		Year Prior to Delivery June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Delivery Year Jan.	Feb.	Mar.	Apr.	May	June	Life of Delivery Range
1989	High	—	—	—	96–16	97–30	97–55	96–30	96–24	96–14	95–00	96–06	97–33	99–30	99–30
	Low	—	—	—	95–60	96–45	96–52	95–16	94–55	94–18	93–19	94–14	95–18	97–17	93–19
	Close	—	—	—	96–46	97–16	96–52	95–34	95–55	94–42	94–20	95–62	97–26	98–34	—
1990	High	—	—	—	—	—	101–02	101–29	100–33	98–60	98–03	98–00	97–49	98–39	101–29
	Low	—	—	—	—	—	100–62	100–24	98–02	97–29	96–50	95–35	95–30	97–33	95–30
	Close	—	—	—	—	—	101–02	100–38	98–35	98–06	97–11	95–55	97–36	97–53	—
1991	High	—	—	—	—	—	100–14	101–21	101–24	101–57					
	Low	—	—	—	—	—	99–01	100–07	99–63	100–40					
	Close	—	—	—	—	—	100–01	100–49	100–62	100–44					

Source: Chicago Board of Trade T.326

Average Open Interest of 5-Yr. T-Notes Futures in Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1988					2,545	5,292	10,584	11,424	12,677	18,403	24,569	34,267
1989	34,728	40,203	45,320	46,371	48,195	42,496	44,985	34,675	37,474	42,669	57,901	73,798
1990	81,705	74,568	74,999	60,841	59,417	56,485	54,004	64,100	75,955	78,370	82,981	93,549
1991	80,059	82,223										

Source: Chicago Board of Trade T.325

Volume of Trading of 5-Yr. T-Notes Futures in Chicago In Thousands of Contracts

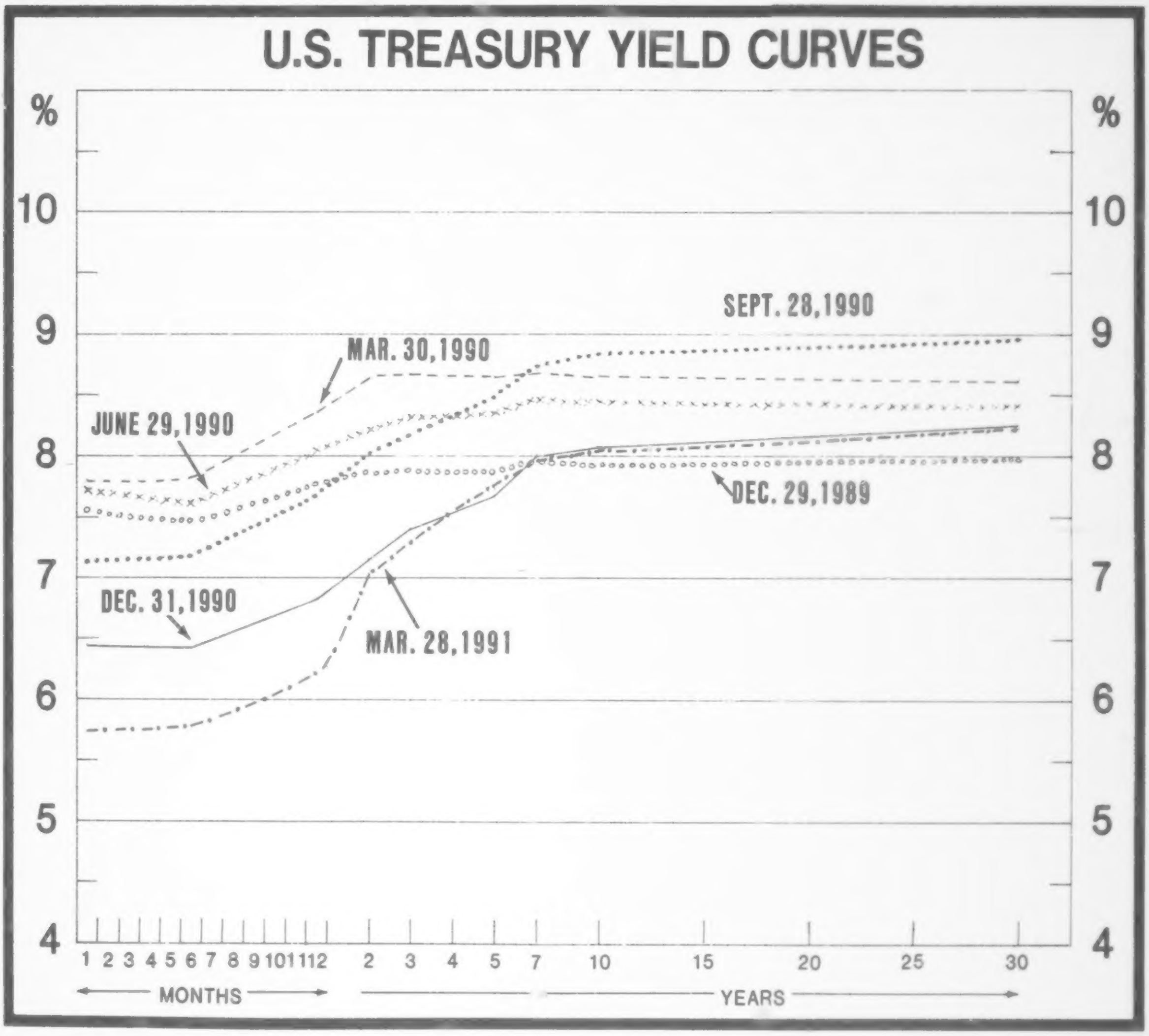
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1988					20.6	56.5	45.6	66.4	73.8	54.8	97.1	91.[illegible]	506.6
1989	91.1	156.8	128.1	89.2	167.3	162.0	142.3	205.2	121.2	148.3	253.4	116.9	1,782
1990	184.5	277.5	164.9	107.6	266.6	140.8	131.6	320.4	189.0	197.9	305.7	40.8	2,327
1991	220.5	318.5											

Source: Chicago Board of Trade T.324

High, Low & Closing Prices of June Treasury Bond Futures in Chicago In 32nds of 100%

Year of Delivery		Year Prior to Delivery June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Delivery Year Jan.	Feb.	Mar.	Apr.	May	June	Life of Delivery Range
1984	High	74–29	73–05	71–12	72–02	75–15	70–31	70–20	71–06	70–[illegible]	68–22	67–00	64–31	63–21	77–28
	Low	72–00	67–26	66–28	68–09	69–18	68–23	68–05	68–30	67–22	65–22	64–17	59–16	60–11	58–28
	Close	73–03	68–16	68–12	71–23	69–19	70–17	69–15	70–07	68–07	66–07	64–22	60–05	61–19	—
1985	High	61–16	63–10	65–04	67–20	70–03	72–05	72–00	73–07	70–14	69–24	72–17	77–14	80–11	80–11
	Low	58–05	58–00	62–29	63–12	65–19	68–10	69–15	69–09	66–10	67–08	68–23	70–21	77–13	56–25
	Close	58–07	63–01	64–06	66–05	69–14	70–10	70–11	72–03	66–15	69–23	70–24	77–11	79–18	—
1986	High	76–07	76–00	75–05	74–29	76–17	79–25	84–25	85–10	96–01	102–12	105–15	101–11	98–01	105–15
	Low	72–10	71–09	71–19	71–26	72–04	75–15	78–04	80–20	82–26	92–06	97–29	93–19	90–22	56–29
	Close	74–05	72–09	74–02	73–14	76–01	79–15	84–08	84–03	94–00	102–10	100–24	93–28	96–13	—
1987	High	97–10	99–07	100–03	99–23	96–24	98–24	99–30	101–02	100–25	101–19	98–16	93–19	94–07	102–05
	Low	88–12	92–16	93–01	90–04	91–21	93–24	96–24	97–09	97–03	97–13	88–13	87–04	89–05	63–12
	Close	97–06	95–1[illegible]	99–29	94–21	96–06	97–25	97–06	98–25	100–14	98–15	93–02	92–02	93–08	—
1988	High	90–29	90–05	88–17	84–30	87–[illegible]5	88–25	88–09	93–00	94–17	94–11	91–04	88–06	90–22	99–12
	Low	85–29	86–12	84–02	79–19	75–00	84–19	82–16	85–09	91–14	89–14	87–17	85–03	86–05	66–16
	Close	88–27	86–22	84–25	80–[illegible]2	85–25	85–28	86–30	92–30	93–20	90–02	87–29	85–26	87–23	—
1989	High	87–09	86–29	85–26	88–0[illegible]	90–11	90–12	89–26	91–21	91–18	88–28	90–17	93–15	97–25	97–25
	Low	83–08	83–04	82–02	84–05	87–16	86–09	86–27	87–24	87–12	86–09	87–25	88–07	92–23	73–11
	Close	86–09	84–04	84–12	87–24	90–10	87–23	88–26	90–20	88–06	88–13	90–06	93–02	95–27	—
1990	High	97–16	98–29	100–11	97–11	100–15	100–00	100–15	98–21	94–30	94–01	93–28	93–07	95–10	100–15
	Low	92–13	95–31	95–16	94–25	95–19	98–13	98–02	92–13	91–13	91–00	88–07	88–10	93–17	
	Close	97–11	98–29	95–25	95–19	99–03	99–08	98–17	94–02	93–06	91–28	88–26	92–29	93–19	—
1991	High	94–03	94–02	94–14	88–26	90–28	94–07	97–14	97–01	98–07					
	Low	92–02	91–29	86–07	86–06	87–12	90–13	94–02	92–27	95–12					
	Close	93–17	93–26	88–02	88–19	90–08	94–06	95–09	95–25	95–17					

Source: Chicago Board of Trade T.320



U.S. TREASURY YIELD CURVES

U.S. Industrial Production Index[1] (Seasonally Adjusted) 1987 = 100

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1979	85.1	85.8	86.1	85.2	86.2	86.1	85.6	85.3	85.5	86.0	85.7	85.6	85.7
1980	85.9	86.2	86.2	84.5	82.5	81.5	81.2	82.4	83.5	84.0	85.5	85.9	84.1
1981	85.2	85.4	85.7	85.0	85.6	86.1	87.1	86.9	86.5	85.8	84.8	84.1	85.7
1982	82.4	84.2	83.7	83.2	82.7	82.4	82.0	81.6	81.0	80.3	80.0	79.3	81.9
1983	80.8	80.7	81.3	82.3	83.2	83.7	85.3	86.5	87.9	88.6	88.8	89.2	84.9
1984	91.0	90.9	91.9	92.4	93.0	93.5	93.9	94.0	93.9	93.2	93.3	92.8	92.8
1985	93.1	93.8	94.1	94.5	94.7	94.4	94.1	94.5	95.0	94.2	94.6	95.6	94.4
1986	96.1	95.5	94.6	94.8	94.8	94.4	94.8	95.0	95.1	95.6	96.2	96.7	95.3
1987	96.5	97.6	98.2	98.3	99.2	100.1	100.8	101.0	100.9	102.3	102.2	102.6	100.0
1988[2]	103.5	103.5	103.9	104.3	104.8	105.0	106.1	106.4	106.2	106.5	106.9	107.4	105.4
1989[2]	107.7	107.6	107.7	108.6	108.3	108.4	107.8	108.2	108.2	107.7	108.1	108.6	108.1
1990[2]	107.5	108.5	108.9	108.8	109.4	110.1	110.4	110.5	110.4	109.4	107.5		

[1] Total Index of the Federal Reserve Index of Quantity Output. [2] Preliminary. *Source: Federal Reserve System* T.318

High, Low & Closing Prices of June 13 Wk. Treasury Bill Futures in Chicago In Points of 100%

Year of Delivery		Year Prior to Delivery									Delivery Year					Life of Delivery Range
		Apr.	May	June	July	Aug.	Sept.	Oct	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1982	High	89.20	87.81	88.47	87.86	87.52	87.00	87.61	89.54	89.42	87.85	87.48	88.32	88.16	88.94	88.46	91.26
	Low	87.09	86.03	87.40	86.91	85.95	85.48	85.53	87.42	86.93	85.85	85.45	86.46	86.67	87.41	87.16	85.45
	Close	87.10	87.73	87.92	87.21	86.08	85.60	87.55	89.19	87.76	86.90	86.92	86.83	87.88	88.57	87.18	—
1983	High	87.37	87.82	87.56	87.93	89.12	89.66	91.19	91.43	91.94	92.26	92.40	92.28	92.04	92.22	91.65	92.40
	Low	86.45	87.00	86.32	86.75	87.63	87.95	89.29	90.57	90.67	91.41	91.26	91.12	91.20	91.28	91.12	85.83
	Close	87.29	87.64	86.77	87.72	88.11	89.63	90.70	90.61	91.92	91.45	92.19	91.20	91.98	91.30	91.15	—
1984	High	91.23	91.47	90.60	90.44	90.06	90.51	90.66	90.57	90.47	90.82	90.78	90.48	90.18	90.36	90.37	91.47
	Low	90.63	90.33	90.11	89.55	89.30	89.57	90.32	90.13	90.00	90.32	90.28	89.79	89.77	89.44	90.12	86.50
	Close	91.23	90.34	90.39	89.60	89.59	90.46	90.39	90.39	90.44	90.72	90.38	89.97	89.94	90.18	90.28	—
1985	High	88.92	88.60	87.95	88.47	88.90	89.51	90.12	91.13	91.46	91.81	91.47	91.49	92.25	92.93	93.19	93.19
	Low	88.46	87.16	87.14	87.17	88.28	88.53	89.09	89.45	90.69	91.14	90.78	90.39	91.26	91.98	92.95	87.14
	Close	88.52	87.25	87.20	88.28	88.69	89.15	90.10	90.70	91.16	91.54	90.80	91.41	92.01	92.91	93.09	—
1986	High	90.64	91.68	92.24	92.41	92.17	92.32	92.59	92.91	93.30	93.18	93.53	94.07	94.71	94.20	93.74	94.71
	Low	89.86	90.36	91.58	91.50	91.51	91.74	92.03	92.41	92.72	92.63	92.93	93.38	93.96	93.68	93.48	86.43
	Close	90.37	91.66	91.89	91.62	91.93	92.19	92.51	92.91	93.14	93.13	93.39	94.07	94.11	93.71	93.49	—
1987	High	94.38	93.89	94.06	94.37	94.89	95.08	94.90	94.91	94.95	94.97	94.69	94.67	94.38	94.29	94.40	95.08
	Low	93.55	93.17	92.94	93.91	94.22	93.46	94.50	94.55	94.62	94.58	94.18	94.20	93.68	93.66	94.13	90.41
	Close	93.78	93.22	94.03	94.31	94.89	94.57	94.75	94.83	94.66	94.60	94.62	94.31	93.88	94.22	94.35	—
1988	High	94.06	93.05	93.40	93.58	93.38	92.84	94.10	93.59	93.79	94.20	94.45	94.40	94.30	93.88	93.51	94.45
	Low	92.77	91.95	92.39	93.05	92.71	92.02	91.28	92.91	93.06	93.43	94.04	93.98	93.82	93.37	93.48	91.28
	Close	92.98	92.70	93.29	93.11	92.82	92.07	93.04	93.58	93.70	94.18	94.35	94.19	93.87	93.47	93.49	—
1989	High	93.20	92.91	92.96	92.80	92.62	92.72	92.89	92.94	92.34	91.89	91.68	91.08	91.87	91.98	—	93.48
	Low	92.84	92.42	92.48	92.35	91.97	92.15	92.51	92.09	91.79	91.62	90.80	90.48	90.90	91.35	—	90.48
	Close	92.90	92.54	92.75	92.41	92.19	92.58	92.88	92.34	91.89	91.66	90.91	90.83	91.70	91.36	—	—
1990	High	91.87	92.46	93.09	93.58	93.53	93.03	93.53	93.66	93.65	93.33	92.78	92.59	92.53	92.45	92.38	93.66
	Low	91.40	91.69	92.40	92.97	92.52	92.52	92.60	93.06	93.30	92.63	92.43	92.09	91.97	91.92	92.19	
	Close	91.86	92.41	93.01	93.44	92.62	92.60	93.21	93.47	93.33	92.68	92.61	92.25	92.06	92.26	92.20	—
1991	High	92.13	92.26	92.53	92.88	93.12	93.32	93.69	93.88	94.13	94.33	94.52					
	Low	91.53	91.52	92.23	92.29	92.43	92.77	93.21	93.66	93.66	94.05	94.11					
	Close	91.61	92.22	92.45	92.87	92.84	93.23	93.66	93.78	94.07	94.18	94.13					

Source: International Monetary Market (Chicago)

T.321

Volume of Trading of T-Note (10-Yr.) Futures in Chicago In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	59.7	110.5	126.8	105.3	199.1	145.1	147.2	162.8	139.5	149.2	166.0	150.7	1,662
1985	171.8	216.0	215.9	175.8	274.9	266.9	219.4	282.9	212.7	234.3	297.5	292.5	2,860
1986	269.7	401.4	383.1	381.7	434.8	470.3	309.7	363.1	459.5	319.9	328.1	305.2	4,426
1987	304.9	358.3	347.6	643.8	541.3	405.1	269.6	446.0	512.9	662.0	369.4	392.8	5,254
1988	335.3	462.8	420.6	298.8	467.8	469.6	327.4	566.0	455.4	383.2	537.4	476.7	5,201
1989	450.5	547.9	468.3	431.6	625.6	637.3	453.0	629.6	465.8	555.8	516.7	327.4	6,110
1990	491.3	650.5	480.9	381.1	638.7	427.4	415.0	703.0	399.3	449.6	574.3	442.6	6,054
1991	507.7	519.6											

Source: Chicago Board of Trade

T.0565B

Volume of Trading of Eurodollar Futures in Chicago In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	104.8	127.4	235.4	202.2	434.7	448.1	438.6	354.5	435.3	491.1	532.4	388.4	4,193
1985	524.7	723.6	877.2	764.7	753.7	891.5	798.0	697.5	769.1	694.3	695.4	710.7	8,901
1986	888.5	825.1	627.9	933.7	982.6	1,018.1	755.3	847.2	1,288.7	1,046.7	836.3	774.8	10,825
1987	1,072	1,4[illegible]	1,197	2,562	1,825	1,760	1,292	1,514	2,495	2,849	1,202	1,177	20,416
1988	1,466	1,681	1,635	1,575	1,830	2,288	1,604	1,893	1,957	1,586	2,236	1,952	21,705
1989	2,257	3,107	3,848	4,471	3,941	4,116	3,193	3,980	2,977	3,971	2,914	2,043	40,818
1990	3,244	2,459	2,727	2,566	3,132	2,473	2,947	3,857	2,730	2,898	2,982	2,680	34,696
1991	2,859	2,635											

Source: International Monetary Market (IMM)—Chicago Mercantile Exchange

T.0564B

INTEREST RATES

Average Open Interest of Eurodollar Futures in Chicago In Contracts

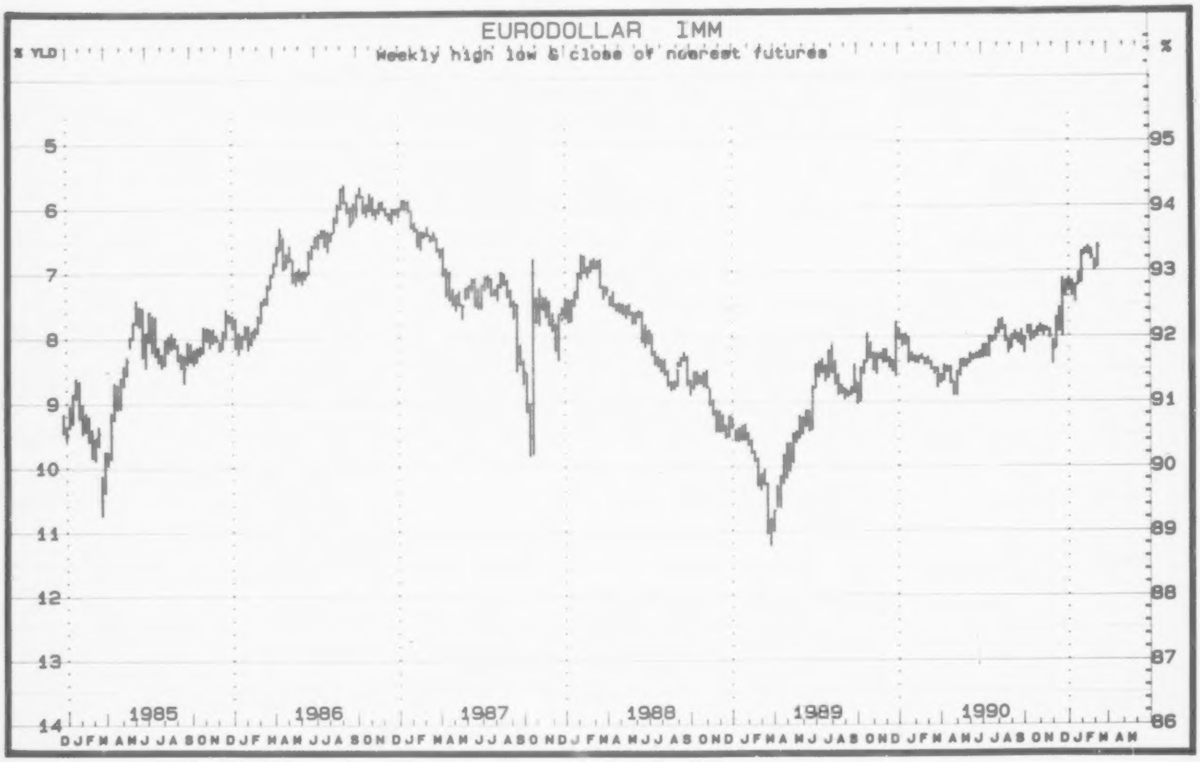
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1986	135,703	151,853	148,114	157,288	171,319	164,950	163,345	186,915	213,502	219,995	228,157	219,868
1987	232,311	267,832	229,482	263,086	291,824	269,490	279,309	316,878	361,431	379,188	354,892	323,502
1988	317,384	358,496	340,855	375,951	422,663	421,907	440,567	510,188	509,180	477,860	519,843	566,951
1989	574,799	672,315	731,344	749,690	756,850	720,434	690,204	713,979	637,947	591,502	663,588	661,925
1990	638,515	662,860	653,188	616,948	662,787	676,324	690,639	740,018	697,837	678,167	728,362	664,136
1991	630,859	721,210										

Source: International Monetary Market (IMM)—Chicago Mercantile Exchange T.0564A

High, Low & Closing Prices of June Eurodollar Futures in Chicago In Points of 100%

Year of Delivery		Year Prior to Delivery									Delivery Year						Life of Delivery Range
		Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1988	High	92.93	91.78	92.10	92.21	92.01	91.48	93.80	92.16	92.32	92.79	93.14	93.10	92.70	92.50	92.40	93.80
	Low	91.44	90.60	91.13	90.95	91.36	90.65	89.79	91.54	91.60	92.00	92.71	92.58	92.37	92.19	92.24	89.79
	Close	91.78	91.47	91.89	91.76	91.46	90.74	91.74	92.03	92.20	92.76	93.00	92.72	92.41	92.23	92.38	—
1989	High	91.71	91.42	91.58	91.42	91.16	91.35	91.51	91.58	91.00	90.60	90.43	89.69	90.35	90.77	90.85	92.12
	Low	91.35	90.97	91.08	90.93	90.50	90.66	91.15	90.67	90.50	90.30	89.30	88.76	89.35	89.91	90.50	88.76
	Close	91.39	91.03	91.36	90.99	90.69	91.19	91.51	90.99	90.56	90.43	89.47	89.30	90.15	90.54	90.56	—
1990	High	90.60	91.13	91.73	92.30	92.35	91.77	92.15	92.45	92.44	92.16	91.71	91.58	91.55	91.64	91.73	92.45
	Low	89.77	90.23	90.90	91.69	91.37	91.24	91.37	91.85	92.04	91.50	91.41	91.18	91.08	91.08	91.60	
	Close	90.43	90.95	91.69	92.24	91.44	91.39	92.00	92.31	92.16	91.60	91.59	91.31	91.19	91.60	91.69	—
1991	High	91.04	91.17	91.64	92.10	92.19	91.96	92.30	92.59	92.95	93.06	93.49					
	Low	90.43	90.38	91.15	91.45	91.37	91.63	91.93	92.25	92.50	92.60	93.00					
	Close	90.51	91.16	91.64	92.09	91.86	91.88	92.26	92.47	92.89	93.00	93.26					

Source: International Monetary Market (IMM)—Chicago Mercantile Exchange T.0564



Average Open Interest of T-Note (10-Yr.) Futures in Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1987	58,926	56,177	55,093	64,924	68,797	71,033	72,033	78,281	88,939	82,672	75,139	77,631
1988	76,066	75,884	73,083	75,836	78,038	84,349	84,612	101,470	96,821	91,811	89,307	74,602
1989	76,964	84,605	78,966	86,661	88,511	76,364	77,211	76,538	71,138	82,844	82,149	72,238
1990	73,155	82,211	76,939	76,030	82,174	78,498	71,413	75,644	72,900	67,309	73,744	76,697
1991	72,621	79,238										

Source: Chicago Board of Trade

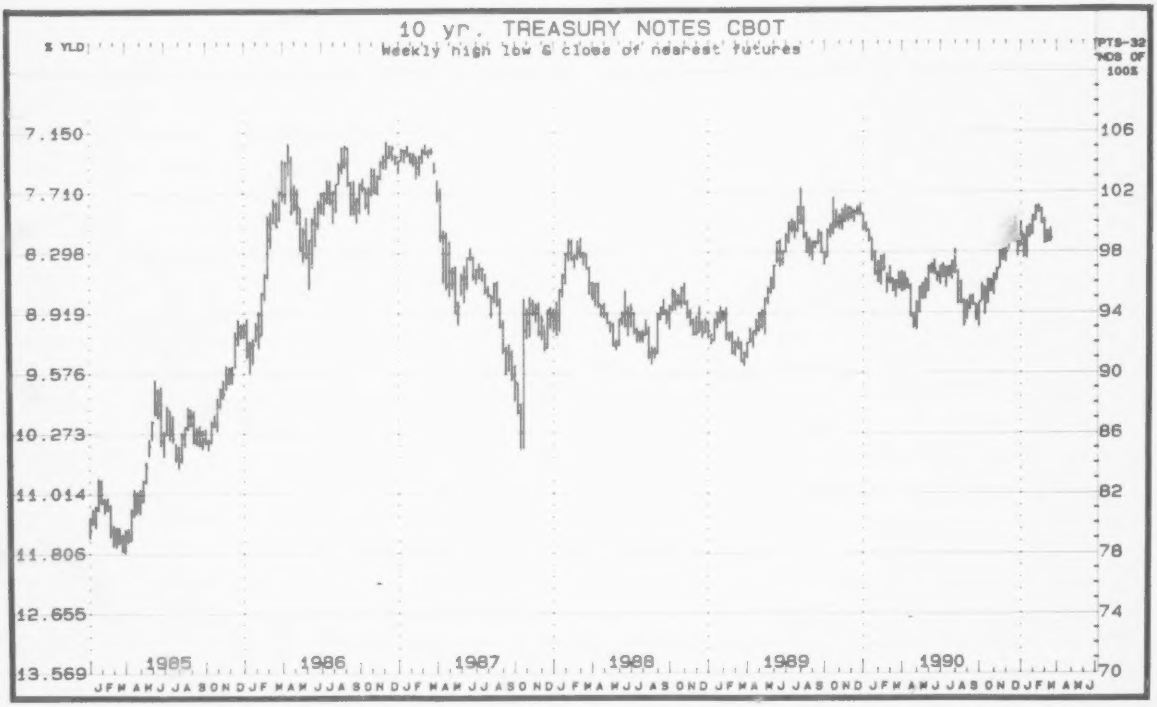
T.0565A

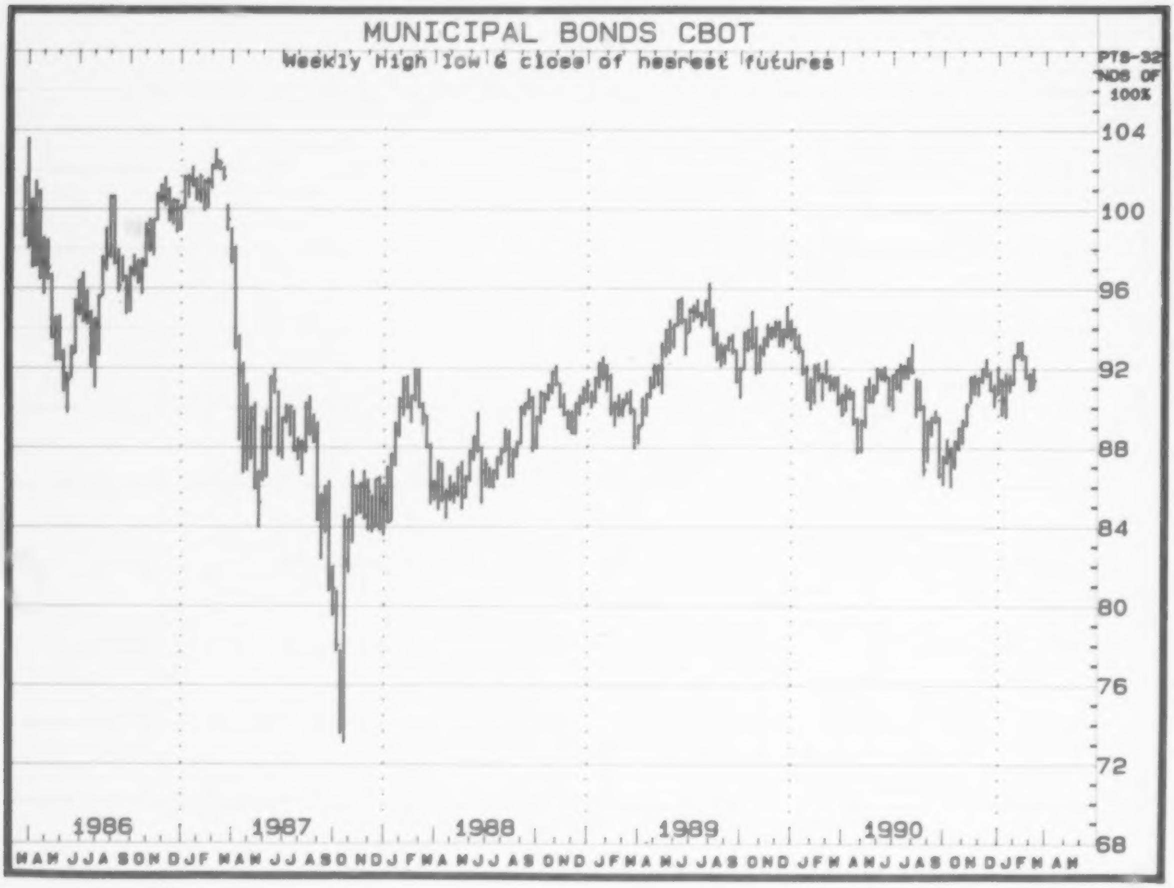
High, Low & Closing Prices of June T-Note Futures in Chicago In 32nds of 100%

Year of Delivery		Year Prior to Delivery							Delivery Year						Life of Delivery Range
		June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1987	High		101–14	102–21	105–00	101–18	102–20	103–21	104–11	104–05	104–15	102–09	98–01	98–10	105–00
	Low	—	98–00	98–29	97–31	99–00	100–12	102–00	102–19	102–05	101–18	95–02	93–06	94–22	93–06
	Close	—	99–21	102–21	99–24	101–15	102–08	102–14	103–13	103–31	102–10	97–24	96–09	97–22	—
1988	High	—	—	92–25	90–23	92–17	93–14	93–10	97–04	98–04	98–09	95–31	94–00	95–15	98–09
	Low	—	—	90–29	87–19	83–30	91–04	89–25	91–24	96–05	94–27	93–20	91–15	92–10	83–30
	Close	—	—	91–00	87–19	91–24	91–23	92–26	97–03	97–23	95–13	93–29	92–02	93–00	—
1989	High	92–28	92–12	91–26	93–19	95–06	95–02	94–02	94–09	94–13	92–15	93–30	96–11	98–26	98–26
	Low	89–31	90–15	89–24	90–30	93–17	92–05	92–03	91–27	91–06	90–13	91–20	92–16	95–23	89–24
	Close	92–08	90–28	90–29	93–19	95–05	93–00	92–19	93–21	91–29	91–30	93–20	95–31	97–24	—
1990	High	—	—	98–08	98–21	101–06	100–23	101–04	99–28	97–21	96–23	96–20	96–07	97–15	101–06
	Low	—	—	97–18	98–21	98–25	99–16	99–13	95–26	95–05	94–25	92–29	92–26	95–27	92–26
	Close	—	—	98–01	98–21	99–26	100–15	99–23	96–26	96–10	95–14	93–08	95–30	96–09	—
1991	High	—	—	—	94–07	95–20	97–26	99–2[illegible]	99–20	100–21					
	Low	—	—	—	92–20	93–15	95–21	97–2[illegible]	97–06	98–20					
	Close	—	—	—	94–04	95–07	97–21	98–14	98–31	98–24					

Source: Chicago Board of Trade

T.0565

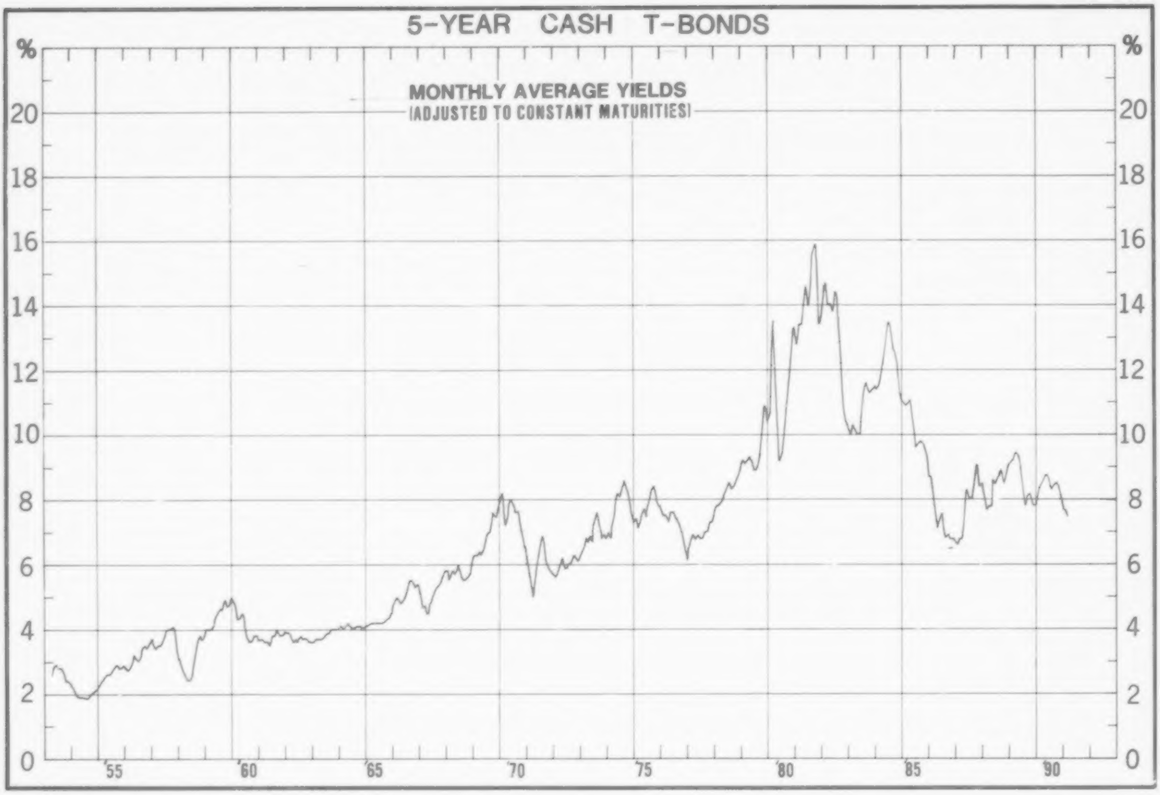




U.S. Federal Funds Rate In Percent

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct	Nov.	Dec.	Annual
1976	4.87	4.77	4.84	4.82	5.29	5.48	5.31	5.29	5.25	5.03	4.95	4.65	5.05
1977	4.61	4.68	4.69	4.73	5.35	5.39	5.42	5.90	6.14	6.47	6.51	6.56	5.54
1978	6.70	6.78	6.79	6.89	7.36	7.60	7.81	8.04	8.45	8.96	9.76	10.03	7.93
1979	10.07	10.06	10.09	10.01	10.24	10.29	10.47	10.94	11.43	13.77	13.18	13.78	11.19
1980	13.82	14.13	17.19	17.61	10.98	9.47	9.03	9.61	10.87	12.81	15.85	18.90	13.36
1981	19.08	15.93	14.70	15.72	18.52	19.10	19.04	17.82	15.87	15.08	13.31	12.37	16.38
1982	13.22	14.78	14.68	14.94	14.45	14.15	12.59	10.12	10.31	9.71	9.20	8.95	12.26
1983	8.68	8.51	8.77	8.80	8.63	8.98	9.37	9.56	9.45	9.48	9.34	9.47	9.09
1984	9.56	9.59	9.91	10.29	10.32	11.06	11.23	11.64	11.30	9.99	9.43	8.38	10.23
1985	8.35	8.50	8.58	8.27	7.97	7.53	7.88	7.90	7.92	7.99	8.05	8.27	7.41
1986	8.14	7.86	7.48	6.99	6.85	6.92	6.56	6.17	5.89	5.85	6.04	6.91	6.81
1987	6.43	6.10	6.13	6.37	6.85	6.73	6.58	6.73	7.22	7.29	6.69	6.77	6.66
1988	6.83	6.58	6.58	6.87	7.09	7.51	7.76	8.01	8.19	8.30	8.35	8.76	7.57
1989	9.12	9.36	9.85	9.84	9.81	9.53	9.24	8.99	9.02	8.84	8.55	8.45	9.22
1990	8.23	8.24	8.28	8.26	8.18	8.29	8.15	8.13	8.20	8.11	7.81		

Source: U.S. Dept. of Commerce T.318a



U.S. Money Supply M1 in 1982 Dollars In Billions of Dollars

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	496.1	496.0	497.7	498.2	499.3	502.3	501.3	500.5	502.4	499.3	501.6	504.9	500.0
1985	507.8	511.4	512.0	513.3	517.1	523.0	527.3	534.1	539.6	540.4	541.7	546.7	526.2
1986	545.5	551.3	562.1	569.4	577.7	583.2	591.5	599.0	603.5	609.0	618.0	633.0	585.4
1987	632.7	631.0	630.7	636.8	635.9	629.8	629.5	629.2	629.5	635.3	630.9	628.0	632.7
1988[1]	630.4	630.8	631.8	634.7	632.0	634.4	636.7	634.5	633.0	631.4	630.8	631.7	632.7
1989[1]	625.0	622.9	619.0	612.0	605.0	601.6	604.0	603.0	605.5	606.7	605.4	607.2	609.9
1990[1]	600.8	602.6	602.4	603.4	601.0	600.9	598.4	598.6	598.8	593.8	593.9		

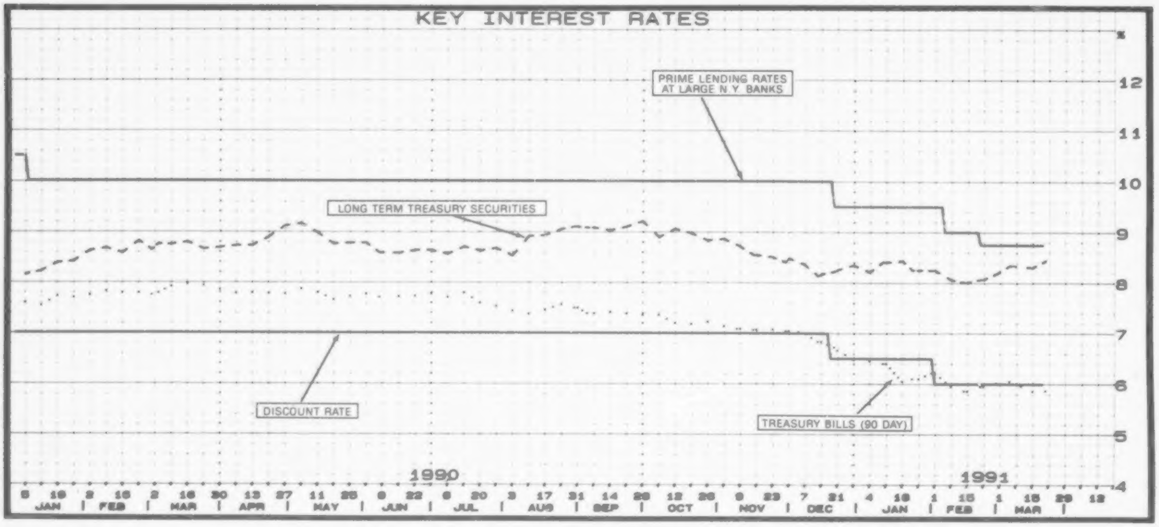
[1] Preliminary. *M1*—This measure is currency, travelers checks, plus demand deposits at commercial banks and interest-earning checkable deposits at all depository institutions. *Source: Federal Reserve System* T.327

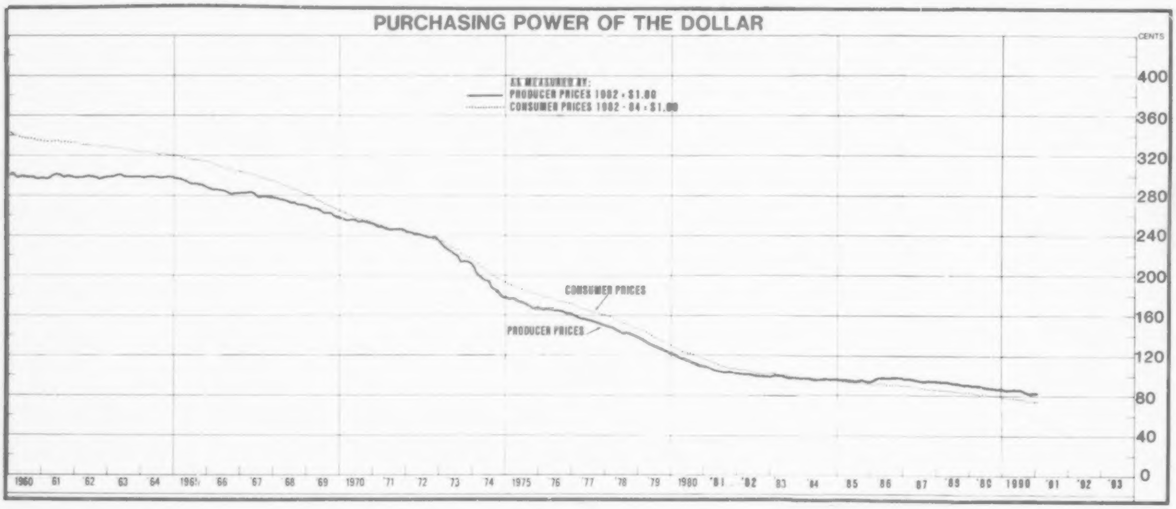
U.S. Money Supply M2 in 1982 Dollars In Billions of Dollars

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1983	1,977	2,013	2,028	2,029	2,035	2,045	2,050	2,054	2,061	2,069	2,076	2,082	2,043
1984	2,078	2,086	2,093	2,096	2,102	2,111	2,112	2,116	2,125	2,129	2,147	2,166	2,114
1985	2,186	2,196	2,195	2,188	2,199	2,219	2,230	2,245	2,255	2,256	2,255	2,262	2,224
1986	2,259	2,274	2,308	2,334	2,351	2,361	2,384	2,399	2,409	2,424	2,435	2,451	2,363
[illegible]87	2,450	2,410	2,432	2,431	2,424	2,420	2,421	2,422	2,429	2,435	2,429	2,429	2,430
1988[1]	2,436	2,449	2,456	2,461	2,459	2,462	2,461	2,457	2,452	2,446	2,454	2,454	2,454
1989[1]	2,437	2,437	2,433	2,417	2,405	2,412	2,424	2,440	2,447	2,450	2,455	2,461	2,435
1990[1]	2,442	2,448	2,448	2,451	2,444	2,437	2,432	2,425	2,418	2,404	2,395		

[1] Preliminary. *M2*—This measure adds to M1 overnight repurchase agreements (RP's) issued by commercial banks and certain overnight Eurodollars (those issued by Caribbean branches of member banks) held by U.S. nonbank residents, general purpose and broker/dealer money market mutual fund shares (MMMF), and savings and small-denomination time deposits. *Source: Federal Reserve System* T.328

INTEREST RATES





U.S. Gross National Product, National Income, and Personal Income In Billions of Current Dollars[1]

Year	Gross National Product					National Income					Personal Income				
	I	II	III	IV	Annual Avg.	I	II	III	IV	Annual Avg.	I	II	III	IV	Annual Avg.
1981	2,979	3,018	3,100	3,114	3,053	2,388	2,415	2,483	2,487	2,444	2,441	2,485	2,568	2,591	2,521
1982	3,113	3,160	3,179	3,213	3,166	2,483	2,514	2,528	2,548	2,518	2,614	2,656	2,684	2,729	2,671
1983	3,266	3,367	3,444	3,546	3,406	2,599	2,686	2,742	2,852	2,720	2,753	2,813	2,847	2,942	2,839
1984	3,675	3,754	3,808	3,852	3,772	2,962	3,009	3,047	3,096	3,029	3,034	3,075	3,138	3,188	3,109
1985	3,926	3,979	4,047	4,108	4,015	3,162	3,209	3,252	3,313	3,234	3,263	3,308	3,332	3,399	3,325
1986	4,181	4,195	4,253	4,297	4,232	3,363	3,395	3,419	3,473	3,413	3,457	3,510	3,540	3,598	3,526
1987	4,392	4,472	4,552	4,648	4,516	3,550	3,613	3,687	3,792	3,660	3,672	3,720	3,783	3,891	3,766
1988[2]	4,736	4,831	4,918	5,010	4,874	3,864	3,949	4,022	4,104	3,985	3,951	4,033	4,112	4,186	4,071
1989[2]	5,101	5,174	5,239	5,289	5,201	4,177	4,217	4,232	4,267	4,223	4,302	4,363	4,403	4,469	4,384
1990[2]	5,375	5,443	5,515	5,519	5,463	4,350	4,411	4,452			4,563	4,622	4,679	4,719	4,646

[1] Seasonally adjusted at annual rates. [2] Preliminary. *Source: U.S. Dept. of Commerce* T.329

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Iron and Steel

The U.S. iron and steel industry found 1990 to be a year of retrenchment. After two years of strong performance gains with, for example, steel shipments averaging above 82 million short tons, shipments in 1990 were due to drop to 76-79 million, according to analysts. However, the steel industry had shed some 40 million tons of excess capacity over the last decade and was operating profitably.

The largest area of iron production is the Lake Superior area, which in 1989 provided 57 million tonnes of ore out of U.S. production of 59 million. For the first eight months of 1990, the Lake Superior region produced 38.2 million tonnes out of a total 38.8 million. Shipments from Lake Superior in the first eight months of 1990 were 35.08 million tonnes.

The U.S. engages in a lively trade with Canada, and for all of 1989, Canadian iron ore exports to the U.S. totaled 39.47 million tonnes, versus 20.92 million for the first eight months of 1990. In the Jan.-Aug. 1990 period, Newfoundland supplied 11.32 million tonnes to the U.S., while Quebec sent 8.45 million.

U.S. consumption of iron ore and agglomerates at consuming plants totaled 42.75 million tonnes in the first seven months of 1990, compared with 44.50 million for the same period in 1989.

Blast furnaces, especially in Indiana and Illinois, were the largest iron ore users, consuming 39.55 million tonnes in the first seven months, near 1989's seven-month total of 39.11 million. Agglomerating plants were next, using 3.13 million tonnes in the review period, compared with 5.10 million in 1989. Pig iron production for the first seven months of 1990 totaled 29.05 million tonnes, versus 30.72 million for the same period of 1989.

For all of 1989, the U.S. exported 5.36 million tonnes of iron ore and agglomerate. Canada was the major customer, receiving all but 6,000 tonnes of the total. For the first seven months of 1990, U.S. ore exports totaled 2.76 million tonnes, with Canada receiving 2.74 million. Pellets accounted for the vast majority of the exports.

In the first seven months of 1990, iron ore imports totaled 9.12 million tonnes from nine trade partners, with a value of $272 million. For the same period in 1989, imports were 11.53 million tonnes from eleven nations.

For the first eight months of 1990, domestic raw steel production totaled 65.83 million short tons, down 2 percent from the same 1989 period. Electric furnace shares of that total were 37 percent in 1990 and 36 percent in 1989.

Raw steel capacity utilization was 85 percent through the first eight months of 1990, below 87 percent in the same period of 1989. Continuous cast steel production represented 66 percent of total raw steel production in 1990.

U.S. prices for No. 1 heavy melting steel scrap were $112.59 a long ton in September 1990, above $102.62 in September 1989.

World Production of Raw Steel (Ingots & Castings) In Millions of Short Tons

Year	Belgium	Brazil	Canada	Czechoslovakia	China	France	Italy	Japan	Rep. of Korea	Poland	Spain	South Africa	United Kingdom	United States	USSR	West Germany	World Total
1983	11.2	16.2	14.1	16.6	44.0	19.4	23.9	107.1	13.1	17.9	14.0	7.9	16.5	84.6	168.1	39.4	730.8
1984	12.5	20.3	16.2	16.3	47.8	21.0	26.5	116.4	14.4	18.2	14.9	8.6	16.7	92.5	170.0	43.4	784.0
1985	11.8	22.5	16.1	16.6	51.5	20.8	26.2	116.1	14.9	17.8	15.7	9.5	17.3	88.3	170.5	44.6	791.4
1986	10.7	23.4	15.5	16.7	57.4	19.4	25.2	108.3	16.0	18.9	13.2	9.7	16.3	81.6	177.0	40.9	784.0
1987	10.8	24.5	16.2	17.0	61.7	19.5	25.2	108.6	18.5	18.9	12.9	9.3	19.2	89.2	178.5	40.0	808.2
1988[1]	12.3	27.0	16.7	16.5	65.0	20.9	26.1	116.5	21.1	18.7	13.2	9.5	21.0	99.9	179.5	45.2	857.0
1989[2]		27.6			67.5	21.3	27.8	118.9	24.1				20.6	97.9	176.5	45.2	863.1
1990[2]		22.0			68.0	22.0	29.5	119.5	25.0				20.6	98.0	174.0	45.0	875.0

[1] Preliminary. [2] Estimate. *Source: Bureau of Mines* T.330

Average Wholesale Prices of Iron and Steel in the U.S. In Dollars Per Net Ton

Year	Pig Iron		No. 2 F.O.B. Birmingham	Steel Billets Pitts.	No. 1 Heavy Melting Steel Scrap		Cents Per Pound at Pittsburgh								R.R. Steel[3] Scrap
	Bessemer Neville Isl., Pa.	Iron Age Composite			Pitts.	Chicago	Tin Plate (¼ Lb.)	Hot Rolled Sheet[2]	Steel Bars Hot Rolled	Steel Bars Cold Finished	Hot Rolled Strip	Carbon Steel Plates	Cold Rolled Strip	Galvanized Sheets	
1983	213.00	213.00		358.00	76.99	72.42	27.7–29.3	22.16	20.25	28.50	22.39	25.45	33.45	28.23	92.83
1984	213.00	213.00	27.3	368.00	92.71	83.12	29.0–30.7	23.60	22.08	29.87	23.60	24.50	35.30	30.15	110.27
1985	213.00	213.00	27.6	378.00	77.43	72.89	30.7–31.9	23.60	24.10	32.00	23.49	24.50	37.24	30.15	98.03
1986	—	213.00	24.8	378.00	74.87	73.49	31.9–31.9	21.15	24.10	32.00	23.30	18.27	37.24	27.89	94.07
1987		213.00	25.4	378.00	90.58	87.22	31.9–34.1	21.92	17.12	21.23	22.50	19.29	37.24	29.97	118.13
1988[1]		N.A.	25.4	N.A.	113.78	113.47	34.1–36.7	21.50	17.25	21.23	22.10	21.64	37.24	31.05	150.25
1989[1]					106.80	108.33									145.23
1990[1]					106.61	108.62									131.59

[1] Preliminary. [2] 10 gauge. [3] Specialties scrap in $ *per gross ton*. *Source: American Metal Market* T.337

Salient Statistics of Steel in the United States In Millions of Short Tons

Year	Value of Exports (Million $)	Value of Imports (Million $)	Finished Steel Composite Price ¢ Lb.	Production: Steel Ingots and Castings				Production: Alloy Steel[2]			Shipments of Steel Products	
				Basic Oxygen	Open Hearth	Electric[3]	Total	Stainless	Other	Total	Domestic Consumption	Export
1983	1,783	7,238	26.19	52.1	6.0	26.6	84.6	1.8	9.1	10.9	67.6	.5
1984	1,627	11,495	27.31	52.8	8.3	31.4	92.5	1.8	10.8	12.6	73.7	.4
1985	1,476	11,019	27.58	51.9	6.4	29.9	88.3	1.7	9.9	11.6	73.0	
1986	1,407	9,480	24.79	47.9	3.3	30.4	81.6	1.7	8.5	10.2	70.3	
1987	1,540	9,873	25.4	52.5	2.7	34.0	89.2	2.0	9.1	11.1	76.7	
1988[1]	2,556	10,800	25.4	58.0	5.1	36.8	99.9	2.2	10.8	13.0	84.0	
1989[4]			25.2	58.3	4.4	35.1	97.9	2.0	9.0	11.0	84.1	

[1] Preliminary. [2] Included under total steel production. [3] Includes crucible steels. [4] Estimate.
Sources: American Iron & Steel Institute; U.S. Bureau of Mines T.331

U.S. Production of Steel Ingots, Rate of Capability Utilization[1] In Percent

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1983	43.4	49.0	55.5	58.9	57.9	56.5	54.3	55.1	57.8	60.2	58.7	54.7	55.4
1984	69.6	76.0	79.1	80.8	79.8	71.4	65.3	60.5	57.7	58.4	57.8	52.4	68.4
1985	60.9	66.1	72.1	71.6	68.9	66.3	62.1	63.2	63.4	65.2	64.7	59.7	66.1
1986	69.4	71.8	71.9	73.5	69.5	63.5	59.2	52.8	54.3	56.8	56.5	54.9	63.8
1987	65.5	69.5	77.3	80.3	80.2	79.7	77.3	79.1	83.9	84.4	85.2	82.8	79.5
1988	88.1	89.7	92.2	91.4	93.1	87.4	88.0	86.6	90.1	87.7	85.8	83.8	89.2
1989[2]	88.2	89.8	90.9	92.2	88.1	86.2	80.8	79.2	80.0	83.0	77.4	73.3	84.5
1990[2]	83.1	85.1	85.7	85.2	85.7	84.5	82.0	85.5	84.6	85.1	83.8	75.0	83.8
1991[2]	74.6												

[1] Based on tonnage capability to produce raw steel for a full order book. [2] Preliminary. *Source: American Iron and Steel Institute* T.332

United States Production of Steel Ingots In Thousands of Short Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	5,570	5,676	7,127	7,292	7,412	6,993	6,921	7,020	7,134	7,692	7,263	6,991	83,379
1984	7,970	8,142	9,056	8,997	9,174	7,945	7,460	6,915	6,378	6,703	6,422	6,013	92,528
1985	6,984	6,851	8,269	7,872	7,830	7,292	7,010	7,130	6,924	7,351	7,051	6,728	88,259
1986	7,666	7,171	7,947	7,787	7,616	6,730	6,352	5,668	5,644	6,087	5,860	5,877	81,606
1987	6,248	5,992	7,375	7,402	7,641	7,349	7,324	7,494	7,694	8,073	7,882	7,916	89,151
1988	8,380	7,984	8,763	8,398	8,832	8,031	8,313	8,181	8,237	8,332	7,883	7,954	99,924
1989[1]	8,729	8,022	8,997	8,738	8,633	8,171	7,955	7,790	7,617	8,175	7,386	7,222	97,943
1990[1]	8,241	7,624	8,505	8,209	8,529	8,142	8,101	8,452	8,094	8,424	8,021	7,422	97,764
1991[1]	7,567												

[1] Preliminary. *Source: American Iron and Steel Institute* T.333

Shipments of Steel Products[1] by Market Classifications in the United States In Thousands of Net Tons

Year	Appliances, Utensils & Cutlery	Automotive	Containers, Packaging & Shipping Materials	Construction Includ. Maint.	Contractors Products	Electrical Equipment	Export	Machinery, Industrial Equip. & Tools	Oil and Gas	Rail Transportation	Steel for Converting & Processing[2]	Steel Service Center & Distributors	All Other[3]	Total Shipments
1983	1,618	12,320	4,532	7,271	2,703	2,335	544	2,486	1,296	937	1,211	16,710	13,621	67,584
1984	1,635	12,554	4,337	8,614	2,563	2,363	428	2,737	1,727	1,036	4,686	17,234	13,098	73,012
1985	1,182	12,725	4,069	6,407	2,663	1,845	494	2,129	1,745	1,059	4,971	17,548	15,861	72,698
1986	1,648	11,889	4,113	7,336	3,278	2,113	495	2,076	1,023	798	5,635	17,478	12,381	70,263
1987	1,633	11,343	4,372	7,681	3,337	2,373	515	2,277	1,489	758	7,195	19,840	13,844	76,654
1988	1,631	12,078	4,423	6,014	2,815	2,465	1,233	2,537	1,234	1,116	6,410	18,980	23,038	83,974
1989	1,710	11,225	4,465	6,814	2,898	2,484	3,183	2,158	864	1,116	6,177	18,382	22,783	84,259
1990	1,057	10,410	4,481	7,201	2,773	2,375	2,487	2,096	1,375	919	6,900	18,308		84,736

[1] All grades including carbon, alloy & stainless steel. [2] Net total after deducting shipments to reporting companies for conversion or resale. [3] Includes agricultural; bolts, nuts, rivets & screws; forgings (other than automotive); shipbuilding & marine equipment; aircraft; mining, quarrying & lumbering; other domestic & commercial equipment machinery; ordnance & other direct military; & shipments of non-reporting companies. *Source: American Iron and Steel Institute* T.334

Net Shipments of Steel Products in the United States

(All Grades, Including Carbon, Alloy & Stainless Steel) In Thousands of Net Tons

Year	Cold Finished Bars	Rails & Accessories	Wire Drawn &/or Rolled	Tin Mill Products	Plates (cut & coils)	Sheets & Strip Galv. (Hot Dipped)	Hot Rolled Bars	Pipe & Tubing	Struct. Shapes & Steel Piling	Reinforcing Bars	Hot Rolled Sheets	Cold Rolled Sheets	Semi-Finished	Alloy	Stainless
1986	1,235	640	1,080	3,802	3,565	11,269	5,648	2,836	4,528	4,299	12,167	13,250	4,954	6,556	1,187
1987	1,361	515	1,105	3,988	4,048			3,570	5,120	4,918	13,048	13,859	5,456	7,275	1,623
1988	1,499	615	1,073	4,069	7,328	8,115	6,460	4,443	5,209	5,091	12,589	13,871	5,976	4,552	1,586
1989	1,429	545	1,005	4,115	7,293	8,543	6,216	4,011	5,438	5,342	12,898	13,854	6,080	4,143	1,472
1990	1,467	519	920	4,032	7,966	7,883	6,784	4,652	5,992	5,240	13,180	13,271	6,110	4,636	1,515

Source: American Iron & Steel Institute T.335

U.S. Foreign Trade of Iron & Steel Products In Thousands of Short Tons

	U.S. Imports of Iron & Steel Pdts.						Exports of Iron & Steel Pdts. from U.S.					
				Grand Total						Grand Total		
Year	Steel Mill Pdts.	Other Steel Pdts.	Iron Pdts. & Ferro-alloys	Quantity	Mil. $	Iron & Steel Scrap	Steel Mill Pdts.	Other Steel Pdts.	Iron Pdts. & Ferro-alloys	Quantity	Mil. $	Iron & Steel Scrap
1985	24,278	1,211	218	25,707	11,019	611	930	200	136	1,266	1,476	9,950
1986	20,677	1,257	210	22,145	9,480	724	927	168	106	1,201	1,407	11,704
1987	20,351	1,020	163	21,534	9,873	843	1,094	226	99	1,419	1,540	10,367
1988[1]	20,775	1,220	316	22,310	10,800	1,038	2,066	381	129	2,576	2,556	10,098

[1] Preliminary. *Source: U.S. Bureau of Mines; American Metal Market* T.336

World Production of Pig Iron (Excludes Ferro-Alloys) In Millions of Short Tons

Year	Australia	Belgium	Brazil	Canada	China	Czech.	France	W. Germany	India	Italy	Japan	Romania	Poland	Un. Kingdom	USSR	United States	World Total
1986	6.5	8.9	22.4	10.2	55.3	10.6	15.4	32.0	11.6	13.1	82.3	10.3	11.6	10.7	124.8	44.3	553.1
1987	6.1	9.1	23.7	10.5	59.4	10.8	16.3	31.4	12.0	11.5	80.9	9.6	11.5	13.2	124.9	48.3	566.5
1988[1]	6.3	10.0	26.0	10.5	62.2	10.8	14.8	35.8	11.0	12.6	87.4	9.4	11.6	14.3	125.0	55.7	593.9
1989[2]			26.9		57.0		16.6	33.6		13.0	88.2			13.9	123.6	55.9	599.7
1990[2]			17.2		58.0		16.6	34.0		13.5	86.8			13.8	122.0	55.0	608.0

[1] Preliminary. [2] Estimated. *Source: Bureau of Mines* T.338

U.S. Pig Iron Production (Excluding Production of Ferro-Alloys) In Thousands of Short Tons

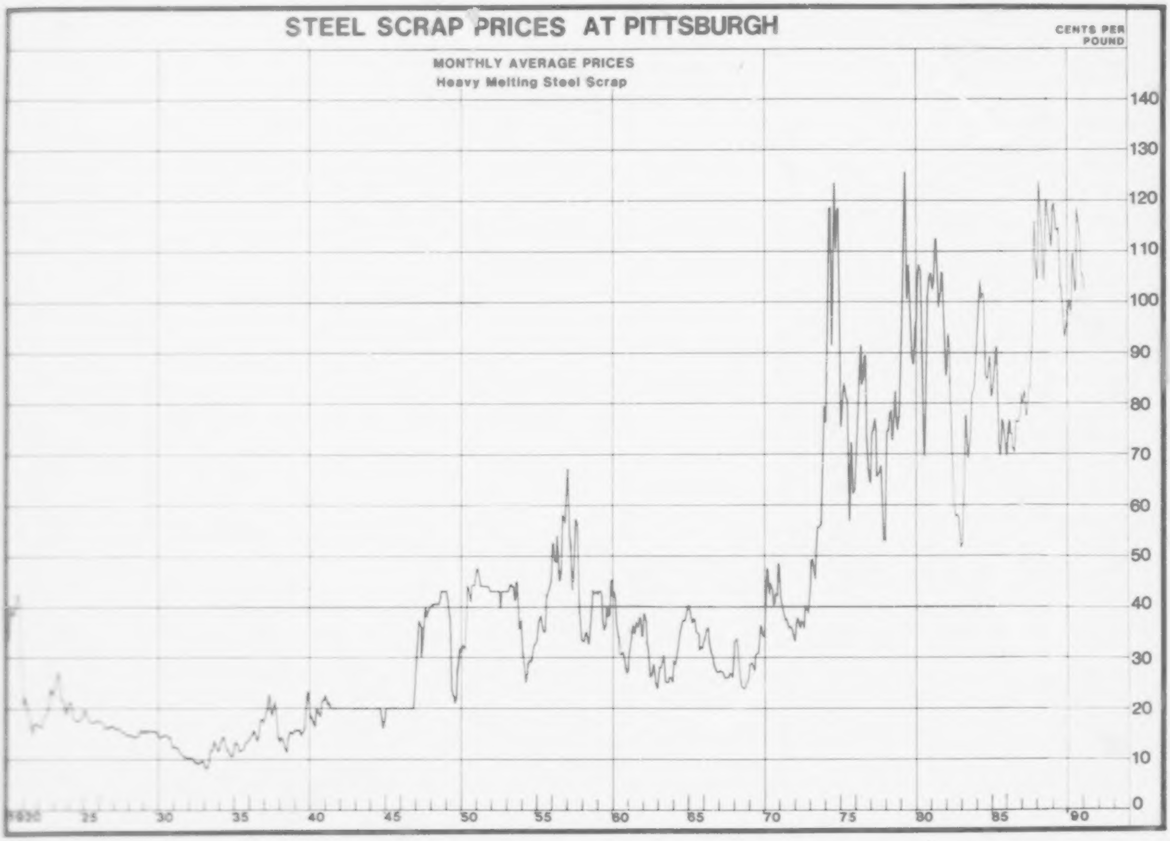
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1986	4,297	4,002	4,341	4,341	4,284	3,697	3,526	2,966	2,982	3,161	3,097	3,146	43,952
1987	3,214	3,069	3,891	4,048	4,256	4,079	4,235	4,165	4,208	4,407	4,351	4,447	48,137
1988	4,683	4,443	4,842	4,699	4,932	4,497	4,762	4,584	4,612	4,646	4,455	4,712	55,745
1989[1]	4,964	4,654	5,112	4,990	4,917	4,707	4,604	4,172	4,403	4,692	4,322	4,202	55,873
1990[1]	4,638	4,221	4,681	4,549	4,746	4,530	4,656	4,788	4,629	4,673	4,523	4,264	54,898
1991[1]	4,077												

[1] Preliminary. *Source: American Iron and Steel Institute* T.341

Salient Statistics of Ferrous Scrap & Pig Iron in the U.S. In Millions of Short Tons

	Consumption: Ferrous Scrap & Pig Iron Charged To												Stocks—Dec. 31 Ferrous Scrap & Pig Iron at Consumers'		
	Mfg. of Pig Iron & Steel Ingots & Castings			Iron Foundries & Misc. Users				All Uses							
Year	Scrap	Pig Iron	Total	Scrap	Pig Iron	Total	Mfg. of Steel Castings (Scrap)	Ferr. Scrap	Pig Iron	Grand Total	Imports of Scrap[2]	Exports of Scrap[3]	Scrap	Pig Iron	Total Stocks
1985	53.2	49.8	103.0	15.2	1.5	16.7	2.1	70.5	51.4	121.9	.6	10.0	5.1	.3	5.4
1986	49.7	44.3	94.0	14.4	1.2	15.6	1.8	65.9	45.6	111.5	.7	11.7	4.3	.2	4.5
1987	51.7	49.0	100.7	14.7	1.1	15.8	1.9	68.3	50.0	118.3	.8	10.4	4.8	.3	5.1
1988	56.3	57.5	113.8	18.2	1.5	19.7	2.3	76.8	59.0	135.8	1.0	10.5	4.6	.2	4.8
1989[1]	51.7	56.9	108.6	17.4	1.5	18.9	3.1	72.2	58.4	130.6	1.1	12.5	4.6	.3	4.9
1990[4]								70.2	55.1	125.3	1.4	12.8	4.3	.2	4.5

[1] Preliminary. [2] Including tinplate scrap. [3] Excluding tinplate circles, strips, cobbles, etc. [4] Estimate. *Source: Bureau of Mines* T.342



STEEL SCRAP PRICES AT PITTSBURGH

MONTHLY AVERAGE PRICES
Heavy Melting Steel Scrap

Consumption of Pig Iron in the U.S., by Type of Furnace or Equipment In Thousands of Net Tons

Year	Open Hearth	Electric	Cupola	Basic Oxy. Conven.	Air & Other Furn.	Direct Casting	Total	Year	Open Hearth	Electric	Cupola	Basic Oxy. Conver.	Air & Other Furn.	Direct Castings	Total
1981	8,867	583	685	62,162	254	2,489	75,040	1986	2,325	313	428	41,582	58	899	45,604
1982	3,635	496	481	38,553	141	1,102	44,409	1987	2,057	1,880	370	47,525	56	982	50,030
1983	3,918	341	425	44,330	91	965	50,070	1988[1]	3,858	748	1,399	52,027	44	969	59,047
1984	5,718	368	469	45,551	92	1,002	53,202	1989[2]	1,744	1,159	429	54,431	33	591	58,387
1985	4,737	503	501	44,515	56	1,100	51,411	1990							

[1] Preliminary. [2] Estimate. *Source: Bureau of Mines* T.340

Wholesale Price of No. 1 Heavy Melting Steel Scrap at Chicago In Dollars Per Gross Ton

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1982	83.00	78.63	69.78	63.86	58.30	51.77	49.00	51.73	48.95	47.86	45.00	45.48	57.78
1983	56.14	67.00	77.70	70.33	65.00	70.52	70.08	74.00	78.00	78.00	78.30	84.00	72.42
1984	88.29	89.00	87.09	85.14	85.00	84.71	79.00	78.00	81.00	81.09	83.00	76.00	83.12
1985	78.86	82.16	84.76	79.59	68.00	62.00	64.24	73.00	72.00	71.87	69.00	69.19	72.89
1986	74.23	76.89	74.05	74.00	74.00	71.00	71.00	76.71	73.14	70.87	73.00	73.00	73.49
1987	78.00	78.00	73.00	72.00	74.15	77.00	78.73	84.00	96.52	116.00	115.47	103.73	87.22
1988	100.80	119.43	119.02	117.24	111.38	108.55	120.00	119.78	115.00	115.00	109.16	106.33	113.47
1989	114.10	118.32	113.00	113.00	113.00	113.00	108.00	108.00	108.00	101.09	96.00	94.50	108.33
1990	104.00	102.29	98.00	109.43	114.55	111.67	108.50	116.00	113.76	112.50	107.73	105.00	108.62
1991	104.76	100.74											

Source: American Metal Market T.339

World Production of Iron Ore[3], by Specified Countries (Gross Weight) In Millions of Metric Tons[4]

Year	Australia	South Africa	Brazil	Canada	Chile	China	France	Mauritania	India	Liberia	Spain	Sweden	Peru	United States	USSR[1]	Venezuela	World Total[1]
1982	86.3	24.2	91.7	35.0	6.4	68.0	19.1	8.1	40.3	17.9	8.2	15.9	5.7	35.4	240.6	11.0	768.6
1983	69.6	16.3	87.3	32.7	5.7	70.0	15.7	7.3	38.2	14.7	7.3	14.0	4.2	37.6	241.3	9.6	728.2
1984[4]	89.0	24.6	112.1	39.9	6.7	75.0	14.8	9.5	41.0	15.1	7.3	18.1	4.0	52.1	247.1	13.1	829.3
1985	97.4	24.4	128.3	39.5	6.5	80.0	14.4	9.3	42.5	15.3	6.5	20.5	4.9	49.5	247.6	16.2	862.2
1986	94.0	24.5	132.3	36.2	7.0	90.0	12.4	8.9	47.8	15.3	6.1	20.5	5.2	39.5	250.0	19.1	868.4
1987	101.7	22.0	134.1	37.7	6.6	100.0	10.9	9.0	51.0	13.7	4.7	19.6	5.2	47.6	250.9	17.8	890.1
1988	96.1	25.2	145.0	38.7	7.9	105.0	10.7	10.0	52.3	12.8	4.2	20.4	4.2	57.5	251.0	18.8	916.4
1989[2]	105.8	30.0	153.7	40.9		100.0	10.5	11.1	49.5	11.7		21.6		59.0	241.0	18.1	923.6
1990[1]	112.0	33.0	162.0	34.0		105.0	9.9	12.0	50.0	5.1		23.0		53.9	239.0	19.0	928.9

[1] Estimate. [2] Preliminary. [3] Iron ore, iron ore concentrates and iron ore agglomerates. [4] Data prior to 1984 are in millions of long tons. *Source: Bureau of Mines*

T.344

Salient Statistics of Iron Ore[2] in the U.S. In Millions of Metric Tons[8]

Year	Net Import Reliance % of Apparent Consumption	Production[3] Total[3]	Production[3] Lake Superior	Production[3] Northeast	Production[3] Southeast	Production[3] West	Shipments[4]	Value Mill. $ (at Mine)	Avg. Value $ at Mine Per Ton	Stocks—Dec. 31 Mines	Stocks—Dec. 31 Consuming Plants	Stocks—Dec. 31 Lake Erie Docks	Imports	Exports	Consumption	Manganiferous Shipments[5]
1982	34	35.4	31.8		3.6		35.8	1,491.8	41.72	12.1	29.9	5.8	14.5	3.2	63.9	—
1983	37	37.6	35.6		2.0		44.6	1,945.0	43.61	4.1[6]	25.5	3.2	13.2	3.8	70.6	—
1984[8]	19	52.1	50.5		1.6		51.7	2,247.7	43.48	5.3	24.4	3.0	17.5	5.1	73.7	.1
1985	21	49.5	48.1		1.4		50.2	2,076.7	41.37	6.0	21.6	2.4	16.0	5.1	71.7	—
1986	33	39.5	38.2		1.3		42.0	1,472.5	35.07	3.3	17.4	2.0	17.0	4.6	62.1	—
1987	22	47.6	46.8		.8		48.0	1,503.1	31.33	2.4	16.6	2.1	16.8	5.1	67.8	N.A.
1988	18	57.5	56.0		1.5		57.1	1,716.7	30.06	3.0	18.0	2.5	20.2	5.3	83.7	N.A.
1989[1]	22	59.0	57.0		2.0		58.3				21.7		19.6	5.4	80.4	
1990[7]	26	53.9					54.2				14.8		15.7	3.5	79.8	

[1] Preliminary. [2] Usable; less than 5% Mn. [3] Includes by-product ore. [4] Excludes by-product ore. [5] Iron ore; 5 to 35% Mn. [6] New classification. [7] Estimate. [8] Data prior to 1984 are in millions of long tons. *Source: Bureau of Mines*

T.345

U.S. Imports (for Consumption) of Iron Ore from Principal Countries In Thous. of Metric Tons[3]

Year	Philippines	Venezuela	Australia	Brazil	Canada	Chile	South Africa	Mauritania	Liberia	Sweden	Peru	Nor[illegible]	Total
1982	—	1,643	—	972	9,281	47	52	—	2,399	71	35	—	14,501
1983	—	1,333	—	1,276	8,832	—	—	—	1,732	68	—	—	13,246
1984	—	1,524	—	2,533	11,190	—	—	—	1,745	84	7	—	17,187
1985	—	2,068	—	2,540	8,557	164	—	—	2,206	65	121	—	15,771
1986[3]	56	2,346	10	3,752	8,836	94	—	66	1,511	106	92	—	17,011
1987	59	2,622	194	3,698	7,981	636	—	412	994	139	84	—	16,849
1988[1]	239	3,568	1,076	4,935	9,157	139	—	522	128	88	181	—	20,183
1989[2]	70	3,700	400	4,500	6,900	100		550	2[illegible]		150		19,600

[1] Preliminary. [2] Estimate. [3] Data prior to 1986 are in thou. of long tons. *Source: Department of [illegible]merce*

T.346

Total[1] Iron Ore Stocks at End of Month in the U.S. In Millions of Metric Tons[3]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1982	60.4	60.9	57.3	57.7	57.6	58.5	59.1	57.8	55.8	54.5	52.6	52.6
1983	45.5	42.6	39.6	37.5	37.2	37.4	37.0	35.3	35.7	34.7	33.8	32.6
1984	30.1	28.4	26.3	26.2	27.4	29.2	30.9	31.6	32.2	33.3	33.7	32.1
1985[3]	30.9	29.4	28.5	28.4	29.5	30.3	30.4	31.2	31.7	31.1	30.4	29.9
1986	27.7	26.6	25.5	24.4	25.4	25.5	25.3	23.8	24.1	24.0	23.1	22.5
1987	22.2	22.1	21.2	20.2	19.5	19.6	19.9	19.7	20.0	20.6	20.9	21.3
1988	21.7	21.6	20.7	20.8	20.4	20.0	20.5	21.5	22.9	22.9	23.2	23.5
1989[2]	23.2	23.3	22.7	21.1	21.7	21.5	22.3	22.3	22.6	21.4	22.5	22.5
1990[2]	22.1	22.0	21.0	20.6	20.5	21.0	21.9	22.1	22.3			

[1] All stocks at mines, furnace yards and at U.S. docks. [2] Preliminary. [3] Prior to 1985 data is in millions of long tons. [2,240 lbs. = 1 long ton] *Source: American Iron Ore Association*

T.347

Lard

Total U.S. lard production in 1989/90 was about 880 million pounds, down from the previous season's 940 million and below initial expectations. Production was forecast to drop slightly in the 1990/91 season, as hog slaughter declined.

U.S. consumption of lard rose slightly in 1989/90 to 817 million pounds. Major uses of lard for food include baking and frying fats and margarine. Domestic use was expected to drop in the 1990/91 season, and a trend towards lower domestic use of lard was under way, as food producers shift away from animal fats.

Lard continued to be an inexpensive source of fat in 1990. For the year, lard prices in Chicago averaged 13.3 cents a pound, slightly above the 1989 level.

Mexico was again the leading export market for U.S. lard in 1990. Total U.S. exports were about 85 million pounds in the 1989/90 season, down from 127 million a year earlier. Exports were expected to drop again during the 1990/91 season.

Domestic ending stocks of lard in 1989/90 were 42 million pounds, compared with 39 million a year earlier.

Supply and Distribution of Lard in the United States In Millions of Pounds

	Supply							Distribution							
	Production									Domestic Disappearance					
	Commercial											Direct Use as Lard			
Year	Federally Inspected	Other	Total	Farm	Total Production	Stocks Jan. 1[2]	Total Supply	Exports	Total Disappearance	Domestic Disappearance	Shortening	Margarine	Civilian	Military	Per Capita Lbs.
1984	911	17	928	6	939	34	973	89	935	846	263	40	491	1	2.1
1985	906	17	923	6	927	39	966	105	931	826	289	62	425	1	1.8
1986	855	14	869	5	876	35	911	104	889	785	274		417	1	1.7
1987	844	13	857	5	863	22	885	107	852	745	224		440	1	1.8
1988	932	—	932	—	932	33	965	127	928	801	265		429	1	1.7
1989[1]	935	—	935	—	935	37	972	110	940	830	295		442	1	1.8

[1] Preliminary. [2] Factory & warehouse. *Source: Economic Research Service, U.S.D.A.* T.348

Lard Exports[2] of the United States by Selected Country of Destination In Thousands of Metric Tons

Year	Asia	Belgium & Lux.	Canada	Belize	Bolivia	Neth. Antilles	Colombia	West Germany	Haiti	Mexico	Ecuador	Netherlands	Poland	United Kingdom	Yugoslavia	Total
1983	5.4	1.0	7.3	1.5	—	.4	.1	—	1.5	19.7	—	—	—	.4	—	40.2
1984	.1	0	9.1	1.4	.1	.3	.1	—	.1	28.6	—	—	0	—	—	40.4
1985	—	0	5.6	.9	.1	.1	.1	—	3.5	35.6	—	—	—	—	—	47.4
1986	.1	—	2.4	1.3	0	.1	—	—	2.0	41.6	—	—	—	0	—	47.8
1987	—	.3	2.5	.9	0	.1	—	—	.6	43.0	—	—	—	0	—	48.2
1988[1]	1.0	0	4.5	1.7	0	.1	.1		.7	49.4				—		57.6

[1] Preliminary. [2] Excludes exports for civilian relief & shipments by CARE. *Source: Foreign Agricultural Service, U.S.D.A.* T.352

United States Commercial[1] Production of Lard In Millions of Pounds

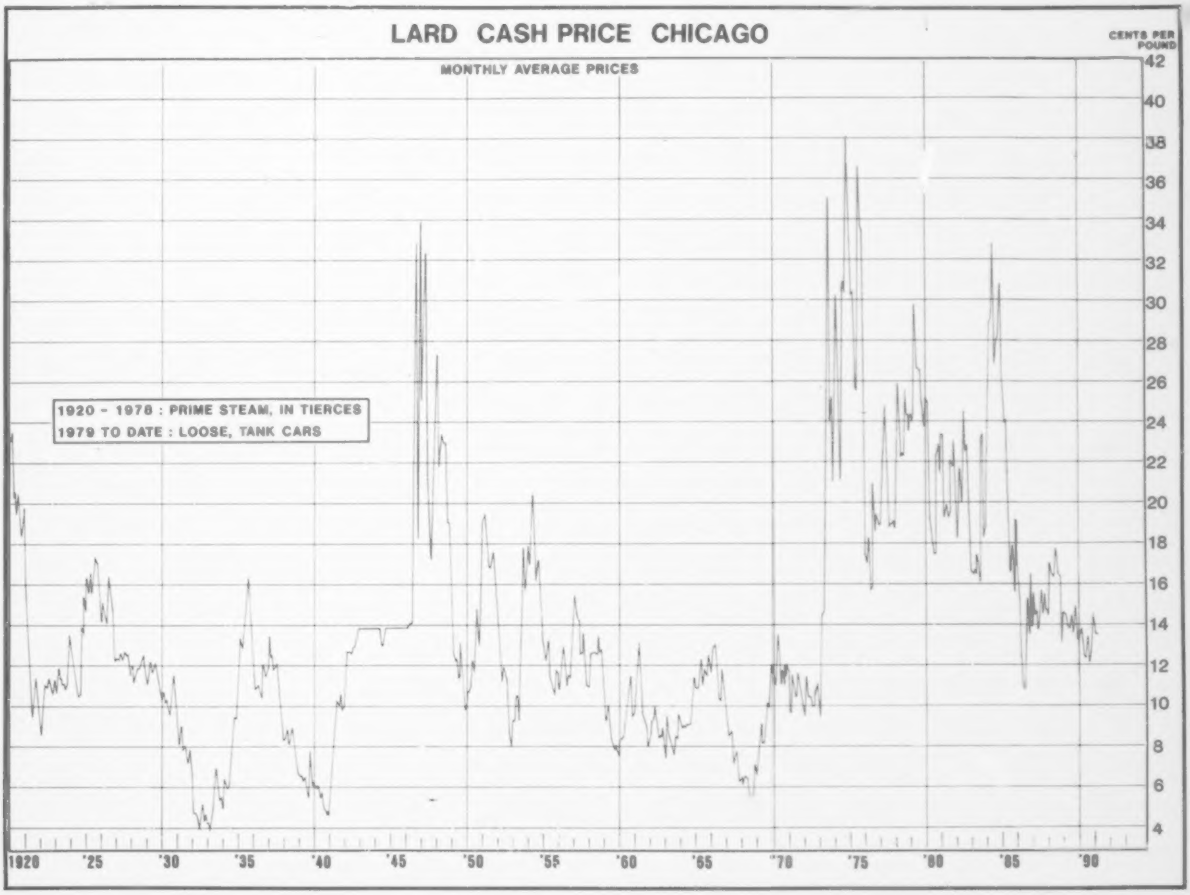
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1985	81.0	70.0	78.0	81.0	83.0	70.0	72.0	77.0	76.0	85.0	78.0	76.0	927
1986	80.0	68.0	76.0	81.0	76.0	67.0	67.0	66.0	71.0	80.0	69.0	75.0	876
1987	76.0	66.0	74.0	73.0	66.0	67.0	68.0	68.0	71.0	78.0	78.0	78.0	863
1988	73.0	73.0	83.0	76.0	74.0	74.0	69.0	79.0	81.0	84.0	84.0	82.0	932
1989[2]	77.0	71.0	82.0	78.0	80.0	73.0	N.A.	N.A.	N.A.	N.A.			

[1] Includes "Rendered Pork Fat." [2] Preliminary. *Source: Department of Agriculture* T.354

Consumption (edible & inedible) of Lard in the United States In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1985	34.1	29.6	30.0	30.1	31.2	29.3	27.9	30.8	36.4	44.5	43.0	33.4	400.3
1986	33.3	31.4	35.6	38.1	35.6	33.8	26.3	23.3	27.5	28.4	28.9	25.6	367.8
1987	20.2	22.1	2[illegible].9	21.3	18.5	28.0	26.8	22.3	33.0	27.4	26.3	32.4	304.2
1988	25.6	27.7	31.1	29.3	28.5	27.4	25.9	28.0	37.9	34.6	36.3	35.3	367.6
1989[1]	28.9	27.5	34.0	31.1	33.5	32.2	28.9	33.5	34.1	39.0	42.5	32.7	397.9
1990[1]	27.0	27.3	30.9	26.3	32.1	29.2	22.8	32.0	31.3	34.6	33.8	30.6	384.9

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.349



Average Wholesale Price of Lard—Loose, Tank Cars, Chicago In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1985	24.6	24.0	24.1	22.7	20.0	18.1	16.9	17.8	15.8	15.4	19.2	16.5	19.6
1986	16.0	15.5	12.3	11.3	10.6	11.3	14.9	15.2	13.6	16.5	13.9	14.2	13.7
1987	15.5	14.4	14.6	13.7	14.7	14.9	15.7	14.5	15.5	14.7	14.7	14.4	14.8
1988	17.0	16.7	16.6	16.4	16.3	17.6	17.7	16.5	16.4	16.3	13.2	14.6	16.3
1989	14.5	14.4	14.1	13.8	13.7	14.1	14.4	13.5	14.2	14.6	14.8	13.2	14.1
1990	13.5	13.8	13.2	12.5	12.3	13.2	13.4	12.1	12.7	14.0	14.5	14.1	13.3
1991	13.5	13.5											

Source: Economic Research Service, U.S.D.A.; Wall St. Journal; CRB. T.350

United States Cold Storage Holdings of all Lard[1], on First of Month In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1985	38.7	33.7	36.6	37.1	42.0	43.1	47.3	42.2	41.0	41.3	39.3	35.9
1986	35.4	37.6	36.4	40.8	39.8	35.5	27.3	32.1	28.3	21.6	30.6	28.9
1987	21.9	31.5	30.9	27.2	28.9	29.9	27.4	27.8	28.9	28.8	38.2	36.2
1988	33.0	37.2	33.8	37.1	31.2	31.9	37.8	41.1	30.1	39.0	41.7	36.7
1989[2]	37.4	38.2	37.1	27.3	34.2	37.6	41.3	32.4	28.9	41.6	29.0	36.6
1990	32.0	33.7	37.6	28.5	31.6	27.4	25.2	25.9	22.8	22.9	22.2	30.3
1991	25.3											

[1] Stocks in factories & warehouses (except that in hands of retailers). [2] Preliminary. *Source: Bureau of the Census* T.351

Lead

Owing to world-wide supply tightness for high-purity lead, most producers were operating at peak performance levels during 1990. While prices remained firm throughout most of 1990, reaching a high on the London Metals Exchange (LME) of 41 cents a pound early on, they slipped back to around 33 cents by year-end. Analysts were predicting further price weakness extending into 1991.

The year was paced by a strong performance by domestic secondary lead smelters. For the first eight months of 1990, with secondary smelters operating at a potentially record level, domestic industry reported only 56,219 tonnes of lead metal imports. This compares with full-year 1989 imports of 115,681 tonnes, the Bureau of Mines reported.

The secondary lead refinery industry has learned to live with and profit from environmental awareness. Recycling of old car batteries, the main source of supply for the secondary lead refinery industry, is a growing business. One of the more interesting developments in 1990 was an agreement by K Mart to collect batteries which Exide, the leading U.S. battery maker, will recycle in its own smelters.

For the first eight months of 1990, total secondary refinery production was 554,800 tonnes, compared with full-year 1989's 808,600. For the first six months, secondary refinery stocks were drawn down by 23 percent, as a result of strong demand.

Recoverable mine production totaled 318,553 tonnes in January to August 1990, compared with full-year 1989's output of 410,599. Primary refinery production was 266,316 tonnes for the same period, versus full-year 1989's 396,455 tonnes.

With a strong recycling and recovery program in place, lead ore and refined metal imports were fairly low. For all of 1989, the U.S. imported only 5,122 tonnes of ore and concentrate, though 1990's pace was running faster, with 10,101 tonnes imported in the first six months. Refined metal imports were down in 1989 and were even lower in 1990. Full-1989 imports totaled 115,681 tonnes, and through the first eight months of 1990, they were 56,219 tonnes.

By far the greatest use of lead is in batteries. In 1989, consumption of lead in storage batteries was 1.01 million tonnes out of total 1989 consumption of 1.28 million. In 1988, lead use in storage batteries was 969,658 tonnes out of total lead consumption of 1.24 million.

Domestically, Indiana and Kentucky are the leading industrial areas for lead fabrication, with a combined use of 287,377 tonnes in 1989. Pennsylvania's consumption was 150,876 tonnes, and next was Texas with 110,975 tonnes.

Futures Market

Lead futures are traded on the London Metal Exchange (LME).

World Smelter (Primary & Secondary) Production of Lead In Thousands of Metric Tons

Year	Australia[3]	Belgium[4]	Bulgaria	Canada[3]	China[2]	France	W. Germany	Japan	Mexico[3]	Peru[3]	Spain	United States	U.K.[3]	USSR	Yugoslavia[3]	World Total
1981	401.8	88.2	19.0	238.2	175.0	163.9	362.3	332.3	194.7	84.2	117.1	1,139	224.5	715.0	120.5	5,384
1982	428.7	80.	8.0	238.9	175.0	140.4	350.4	311.9	179.4	73.8	131.6	1,088	209.3	730.0	109.0	5,265
1983	405.9	84.4	116.0	241.9	195.0	128.6	352.5	317.2	197.8	72.7	143.8	1,023	226.0	745.0	127.1	5,245
1984	399.8	101.5	116.0	252.0	195.0	131.4	357.2	337.1	204.8	75.2	160.0	1,023	227.4	755.0	121.3	5,423
1985	215.7	114.3	116.0	241.6	210.0	223.6	356.3	367.0	234.0	86.9	156.1	1,110	327.2	750.0	100.0	5,641
1986	171.0	98.3	114.0	257.6	240.0	230.4	366.6	361.4	215.0	71.4	130.0	995.1	328.6	755.0	113.0	5,552
1987	216.7	108.0	115.0	230.7	240.0	245.9	340.4	338.3	212.0	76.3	122.7	1,084	338.2	750.0	112.4	5,722
1988[1]	183.0	126.5	115.0	269.4	245.0	255.7	345.1	340.0	203.1	58.6	120.8	1,129	373.8	727.0	109.9	5,855
1989[2]	192.0	126.0	105.0	233.0	270.0	255.0	350.0	332.3	195.9	75.0	125.0	1,205	360.0	735.0	119.0	5,903

[1] Preliminary. [2] Estimated. [3] Refined & bullion. [4] Includes scrap. *Source: Bureau of Mines* T.355

Consumption of Lead in the United States by Products In Thousands of Metric Tons

Year	Ammunition	Bearing Metals	Pipes, Traps & Bends[2]	Cable Covering	Calking Lead	Casting Metals	Glass & Ceramic Pdt's.	Paints	Sheet Lead	Solder	Storage Battery Grids, Post, etc.	Storage Battery Oxides	Gasoline Additives	Type-Metal	Brass and Bronze	Total Consumption
1981	49.5	6.9	8.8	12.1	5.5	18.6	44.3	16.3	19.4	29.7	342.2	428.0	111.4	7.8	13.3	1,167.1
1982	44.2	6.1	8.6	15.2	4.1	25.1	34.5	13.4	15.2	28.5	312.6	391.7	119.2	2.8	11.4	1,075.4
1983	43.7	5.8	13.1	10.5	3.6	16.2	39.7	15.4	14.2	28.5	382.3	424.6	89.1	2.5	11.0	1,148.5
1984	47.8	4.7	13.7	12.3	4.0	15.8	46.1	17.4	14.7	24.4	426.3	439.2	78.9	2.2	7.0	1,207.0
1985	50.2	5.4	11.9	15.5	2.3	19.4	44.1	14.1	14.8	21.4	468.7	372.2	45.7	1.6	7.8	1,148.3
1986	44.4	5.5	12.5	17.1	1.8	10.3	40.8	14.4	17.3	21.3	488.9	364.9	28.5	.3	9.1	1,125.5
1987	46.8	5.3	11.5	20.1	1.9	16.6	N.A.	N.A.	17.4	19.8	529.4	424.2	N.A.	N.A.	9.9	1,230.4
1988	52.7	6.0	11.2	16.2	1.6	15.9	N.A.	N.A.	17.5	19.1	514.7	455.0	N.A.	N.A.	10.0	1,245.2
1989[1]	62.9	2.6	9.8	22.6	1.8	16.2			21.0	17.0	552.3	459.8			9.6	1,283.2

[1] Preliminary. [2] Building. *Source: Bureau of Mines* T.358

LEAD

Salient Statistics of Lead in the United States In Thousands of Metric Tons

Year	Net Import Reliance as a % of Apparent Consumption	Production — of Refined Lead From — Domestic Ores[2]	Foreign Ores[2]	Total Primary	Total Value of Refined Mil. $	Secondary Lead Recovered As Refined Metal	In Antimonial Lead	In Other Alloys	Total	Total Value of Secondary Mil. $	Dec. 31 Stocks Primary	Consumers' Stocks[3]	Avg. Price (¢ per Lb.) New York	London
1977	13	486.7	62.0	548.7	371.4	303.1	383.4	71.1	757.6	512.8		121.4	30.70	28.00
1978	12	501.6	63.5	565.2	419.3	282.6	409.9	76.5	769.2	570.7		125.2	33.65	29.86
1979	5	530.0	45.6	575.6	668.0	352.2	378.8	70.3	801.4	930.0		153.2	52.64	54.52
1980	[5]	508.2	39.4	547.6	512.6	315.2	306.7	53.7	675.6	632.4		126.2	42.46	41.21
1981	1	440.2	55.1	495.3	398.9	282.2	304.4	54.6	641.1	516.3		123.2	36.53	33.30
1982	11	459.9	52.3	512.2	288.4	240.5	284.4	46.4	571.3	321.7		97.2	25.54	24.66
1983	20	463.9	55.2	519.2	248.1	189.6	271.6	42.3	503.5	240.7	53.4	100.8	21.68	19.27
1984	20	324.0	65.4	389.4	219.3	263.4	327.8	42.1	633.4	266.3	45.1	97.1	25.55	20.12
1985	12	422.7	71.4	494.0	207.7	273.7	299.3	42.7	615.7	258.9	84.5	93.1	19.07	17.84
1986	20	348.2	22.1	370.3	180.0	289.5	291.9	43.3	624[illegible]	303.7	20.4	83.8	22.05	18.43
1987	17	336.5	37.1	373.6	296.0	348.9	319.5	41.8	710.1	562.6	21.6	88.6	35.94	26.99
1988	13	371.3	20.7	392.1	321.0	367.1	346.8	28.6	742.5	603.0	15.4	89.9	37.14	29.73
1989[1]	9	379.0	17.4	396.5	343.9	412.0	375.9	25.7	813.6	701.5	15.6	82.7	39.35	30.63
1990[4]	4	385	10	400							24	63	46.00	37.00

[1] Preliminary. [2] And base bullion. [3] Also at secondary smelters. [4] Estimates. [5] Net exporter. *Source: Bureau of Mines* T.357

U.S. Mine Production of Recoverable Lead In Thousands of Metric Tons

Year	Arizona	California	Colorado	Idaho	Illinois	New York	Missouri	Montana	Nevada	New Mexico	Oklahoma	Utah	Virginia	Washington	Wisconsin	Total U.S.[2]
1977	.3	—	20.9	42.9	N.A.	2.5	453.8	.1	.7	N.A.	N.A.	9.7	2.0	1.1	N.A.	537.5
1978	.4	N.A.	15.2	44.8	N.A.	1.0	461.8	.1	.7	N.A.	—	2.5	1.8	N.A.	N.A.	529.7
1979	.4	N.A.	7.6	42.6	N.A.	.5	472.1	.3	—	N.A.	—	N.A.	1.6	—	N.A.	525.6
1980	.2	N.A.	10.3	38.6	N.A.	.9	497.2	.3	—	—	—	—	1.6	N.A.	—	550.4
1981	1.0	N.A.	11.4	38.4	N.A.	1.0	389.7	.2	N.A.	N.A.	—	1.7	1.6	—	—	445.5
1982	.4	N.A.	N.A.	N.A.	N.A.	1.1	474.5	.7	N.A.	N.A.	—	N.A.	—	N.A.	—	512.5
1983	.2	N.A.	N.A.	25.9	N.A.	1.3	409.3	1.2	—	.3	—	—	—	—	—	449.3
1984	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	278.3	N.A.	N.A.	—	—	N.A.	—	—	—	322.7
1985	.6	—	N.A.	33.7	N.A.	N.A.	371.0	.8	—	N.A.	—	—	—	—	—	414.0
1986	N.A.	—	N.A.	10.0	N.A.	N.A.	319.9	N.A.	—	—	—	—	—	—	—	339.8
1987	—	—	N.A.	N.A.	N.A.	N.A.	N A.	N.A.	—	N.A.	—	—	—	—	—	311.3
1988[1]	Not Available						353.2	8.3	Not Available							385.0
1989[1]	Not Available						366.9	Not Available								410.9
1990[3]							375									475

[1] Preliminary. [2] Includes Alaska. [3] Estimate. *Source: Bureau of Mines* T.356

U.S. Foreign Trade of Lead In Thousands of Metric Tons

Year	Exports Ore & Concentrate	Unwrought Lead[3]	Wrought Lead[4]	Scrap	Ash & Residues[5]	Imports for Consumption Ores, Flue Dust or Fume & Mattes	Base Bullion	Pigs & Bars	Reclaimed Scrap, Etc.	Value Million $	General Imports From: Ore, Flue Dust & Matte Australia	Peru	Canada	Pigs & Bars Australia	Mexico	Peru	Canada
1977		4.3	4.7	77.5		88.8	7.3	230.1	3.5	196.9	16.6	6.6	16.0	19.9	71.8	30.4	75.4
1978		3.2	5.1	98.6		61.9	4.3	225.4	3.3	203.0	6.5	6.3	19.6	16.3	80.2	25.7	70.4
1979		7.4	3.3	119.7		44.4	1.7	182.6	4.0	248.3	1.9	12.4	12.8	17.3	73.6	17.9	
1980	27.6	156.5	8.0	119.7		29.6	.3	81.3	2.9	116.5	3.0	18.0	8.5	11.3	28.6	3.3	34.9
1981	33.0	16.8	6.5	59.4		27.2	.4	100.1	2.7	110.5	2.2	14.1	23.5	10.9	33.7	2.9	50.8
1982	29.1	51.0	4.6	51.8		18.9	—	94.9	4.8	69.9	7.7	14.5	4.8	7.3	23.5	8.3	49.8
1983	20.1	17.7	2.8	50.9		19.8	.1	134.4	4.2	89.9	10.0	22.7	6.1	10.9	34.9	10.1	72.7
1984	11.9	5.0	2.5	45.1	9.1	29.9	—	161.5	5.0	104.2	17.0	22.7	14.1	10.9	39.5	9.2	94.9
1985	10.0	25.4	2.0	59.9	10.0	2.6	.8	131.4	3.2	56.5	12.3	15.2	5.2	3.6	33.8	5.2	90.1
1986	4.4	11.2	1.4	59.0	7.2	4.6	.1	140.2	3.3	62.1	11.5	8.4	62.9	—	29.5	1.1	105.3
1987	8.8	4.4	5.8	52.8	3.5	.9	10.8	185.7	6.6	133.8	1.7	19.1	201.2	.1	42.6	.4	92.6
1988	20.9	7.5	6.0	81.9	15.5	20.6	4.0	148.6	7.3	124.8	1.4	11.4	221.8	6.7	30.9	—	104.8
1989[1]	57.0	28.5	5.4	59.9	10.0	5.1	5.8	115.7	.7	86.7	1.9	12.9	189.9	—	19.2	4.3	90.5
1990[2]	52	—— 60 ——		75	12	12	2	92	.4						19		70

[1] Preliminary. [2] Estimate. [3] And lead alloys. [4] Blocks, Pigs, etc. [5] Formerly drosses & flue dust. *Source: Bureau of Mines* T.359

Average Price of Pig Lead, U.S. Primary Producers (Common Corroding)[1] In Cents Per Pound

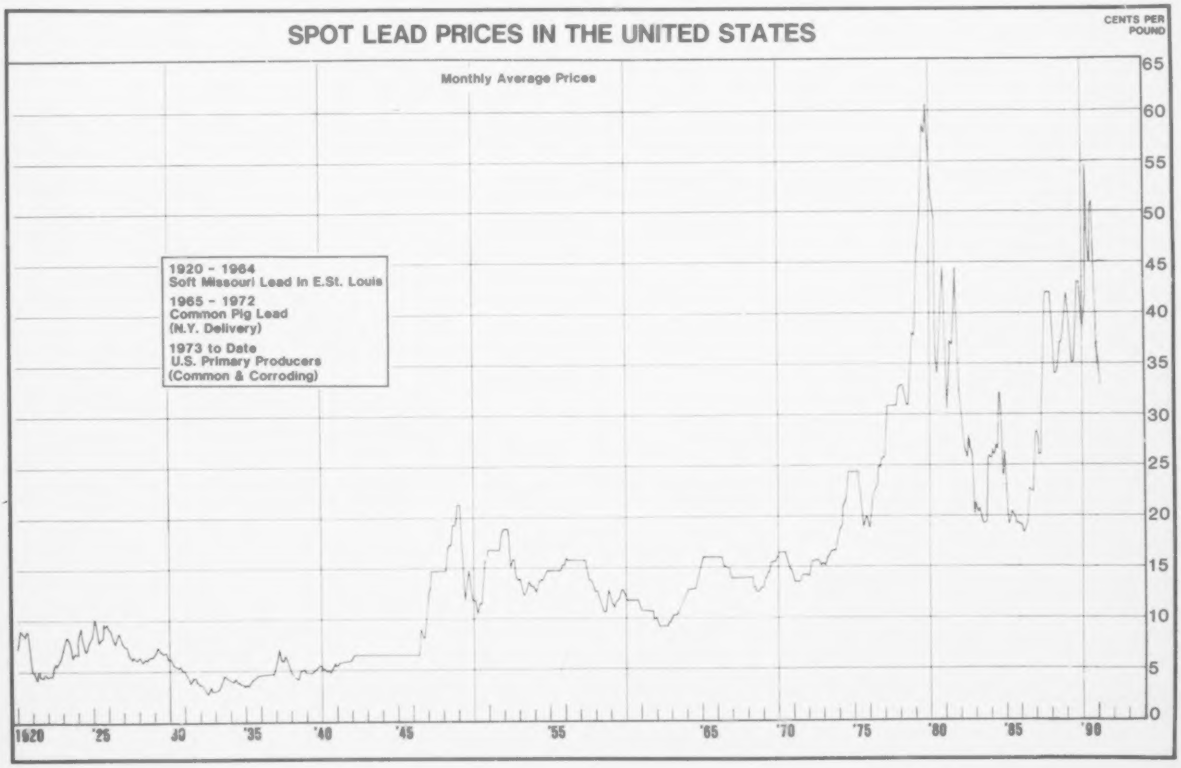
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1983	21.60	20.87	20.43	21.00	20.10	19.34	19.30	19.38	22.24	25.62	26.00	25.69	21.80
1984	26.38	26.00	26.45	27.00	26.55	29.00	32.14	30.13	25.68	24.04	26.42	23.11	26.91
1985	20.45	19.76	19.24	20.48	20.50	20.00	19.88	19.32	19.44	18.97	19.06	19.05	19.68
1986	18.70	18.41	18.55	18.93	19.58	22.41	22.63	22.52	23.43	25.53	27.93	28.37	22.25
1987	27.75	26.03	26.00	27.01	35.10	36.77	41.82	42.00	42.00	42.00	42.00	42.00	35.95
1988	38.00	34.83	34.00	34.00	34.67	36.59	37.00	37.04	38.81	39.58	40.75	42.04	37.28
1989	40.22	37.00	35.00	35.03	36.14	38.82	39.97	41.30	43.00	43.00	40.55	38.55	39.05
1990	39.73	41.74	54.45	48.10	45.00	45.14	50.62	51.00	49.08	44.52	41.33	37.03	45.63
1991	34.18	33.00											

[1] N.Y. Delivery. *Source: American Metal Market* T.360

Refiners Production[1] of Lead in the United States In Thousands of Short Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	50.3	45.2	44.0	36.1	54.3	53.0	44.2	46.4	49.2	50.6	50.8	48.6	572.6
1983	57.0	50.9	52.8	48.9	47.2	42.0	39.5	45.3	41.2	50.0	50.9	46.4	572.3
1984	51.5	51.4	43.0	40.0	39.2	26.2	28.4	29.1	25.3	40.8	28.0	26.5	429.2
1985	43.1	50.3	56.3	52.7	53.4	50.9	32.5	46.6	44.9	39.3	30.1	44.5	544.5
1986	47.4	41.6	49.4	40.2	40.2	26.5	16.9	31.3	27.5	28.6	28.5	30.1	408.2
1987	38.8	33.6	36.0	33.2	34.2	29.5	28.8	30.9	33.4	37.6	39.5	36.3	411.8
1988	34.3	35.4	39.1	34.3	36.2	34.8	31.8	25.3	32.1	49.6	40.0	39.3	432.2
1989	41.0	36.0	39.0	34.0	36.2	35.5	35.7	38.0	39.3	34.7	35.3	32.3	437.0
1990	38.5	37.9	36.9	38.6	36.4	33.3	34.0	38.0	37.4	42.4	36.9	34.8	445.0

[1] Represents refined lead produced from domestic ores by primary smelters plus small amount of secondary material passing through these smelters. Includes GSA metal purchased for remelt. *Source: American Bureau of Metal Statistics, Inc.* T.362



U.S. Mine Production of Recoverable Lead In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	44.9	39.6	37.5	36.7	35.9	28.4	35.3	43.2	37.4	37.1	38.3	34.9	449.2
1984	42.0	42.8	46.5	21.0	24.1	12.3	24.2	23.6	18.7	22.5	19.6	25.5	322.7
1985	31.8	33.3	37.6	39.3	37.1	32.5	34.5	34.8	30.9	36.9	32.5	33.0	414.0
1986	40.4	36.3	38.2	34.0	25.0	23.8	25.2	23.4	24.2	24.3	20.8	24.2	339.8
1987	24.2	23.9	27.9	23.6	27.0	26.3	29.0	24.1	28.2	28.4	23.2	25.5	311.4
1988	27.9	28.2	36.0	32.7	30.3	32.5	30.4	36.3	33.1	34.4	31.1	31.8	385.0
1989[1]	33.3	31.0	34.4	33.2	33.8	36.1	33.2	38.6	34.3	35.1	32.9	30.1	410.6
1990[1]	38.6	35.3	36.1	33.7	37.0	35.0	41.1	45.9	36.8	42.2			

[1] Preliminary. *Source: Bureau of Mines* T.359A

Total Stocks of Lead[1] in the United States at Refiners, at End of Month In Thousands of Short Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	83.3	91.2	84.9	89.0	100.6	98.6	95.3	82.1	61.3	56.6	51.6	58.9
1984	63.3	70.3	76.1	81.5	84.2	83.5	84.9	78.4	64.8	66.2	53.0	49.7
1985	48.2	59.6	79.3	90.4	107.2	128.9	125.0	118.2	114.1	102.4	90.6	93.1
1986	96.1	104.1	116.4	115.8	116.7	105.9	89.1	81.0	57.8	41.9	30.0	22.5
1987	34.2	37.3	39.3	31.5	32.6	20.5	11.7	12.1	12.7	16.4	19.9	23.8
1988	24.7	30.5	30.2	31.8	26.5	16.6	16.2	6.6	5.1	11.6	13.1	17.0
1989	28.7	36.3	43.2	41.4	32.7	31.9	34.6	30.8	30.3	20.7	16.1	17.2
1990	16.2	20.2	18.1	23.3	21.3	21.6	22.9	22.0	22.7	26.2	25.1	28.1

[1] Stocks at own plant & elsewhere. *Source: American Bureau of Metal Statistics, Inc.* T.364

Total[1] Lead Consumption in the United States In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	91.5	74.0	83.1	85.9	83.8	96.3	79.3	102.6	115.7	112.3	102.7	121.4	1,149
1984	112.7	94.1	96.8	89.5	87.3	96.4	82.7	97.3	96.7	103.2	96.9	95.1	1,207
1985	95.8	102.6	101.9	91.3	93.1	83.3	73.0	111.2	108.9	107.6	96.3	83.3	1,148
1986	100.8	89.0	83.0	94.7	89.8	87.7	73.8	98.9	105.9	110.5	94.9	96.6	1,125
1987	96.5	91.1	103.0	101.0	101.4	103.5	97.4	103.2	108.5	119.1	105.8	100.1	1,230
1988	99.8	101.4	116.0	99.3	104.0	103.6	92.1	102.5	103.0	110.6	103.4	95.1	1,231
1989[2]	104.7	98.3	101.2	99.2	101.3	101.6	95.2	102.[illegible]	105.9	114.0	106.2	97.3	1,283
1990[2]	104.1	106.7	111.9	101.1	106.2	103.2	97.7	112.4	104.6	109.0			

[1] Represents total consumption of primary & secondary lead as metal, in chemicals, or in alloys. [2] Preliminary. *Source: Bureau of Mines* T.365

U.S. Lead Recovered from Scrap (Lead Content) In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	41.3	37.4	41.0	41.3	42.5	37.3	37.2	39.6	43.4	48.9	48.4	45.7	503.5
1984	44.4	48.6	47.6	48.5	46.6	46.7	44.5	50.0	49.0	51.7	48.1	41.3	633.4
1985	41.3	43.2	46.4	43.9	44.7	34.9	41.1	45.5	50.8	53.9	54.2	43.4	594.2
1986	49.8	52.9	53.2	50.2	59.1	46.0	41.0	50.2	46.2	51.3	50.8	47.5	614.9
1987	50.0	49.9	54.4	55.6	59.3	53.9	59.9	63.4	53.3	67.3	55.9	55.1	710.2
1988	52.2	57.5	60.1	55.9	52.2	59.4	55.3	56.3	60.7	61.8	61.6	59.7	737.0
1989[1]	62.1	58.6	67.5	64.1	65.3	66.3	61.6	65.9	64.4	73.5	67.1	66.9	808.6
1990[1]	68.7	69.6	73.0	69.4	66.9	67.9	67.0	71.8	71.0	77.5			

[1] Preliminary. *Source: Bureau of Mines* T.366

Domestic Shipments[1] of Lead in the United States by Refiners In Thousands of Short Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	43.5	33.8	44.3	40.3	32.1	39.3	41.8	57.8	62.0	54.5	55.6	39.0	544.1
1984	46.6	43.8	36.6	34.6	36.4	26.7	26.9	35.5	38.5	39.1	40.8	29.6	435.2
1985	44.8	38.9	36.6	41.5	36.7	29.1	36.4	53.4	48.9	51.2	41.9	41.9	501.2
1986	44.5	33.5	37.1	40.9	39.3	37.3	33.7	39.3	50.7	44.6	40.4	37.6	478.8
1987	27.0	30.5	34.1	41.1	34.8	40.0	37.8	30.1	33.1	33.8	35.7	32.7	410.7
1988	33.5	29.5	39.2	33.0	41.4	44.7	32.0	34.7	33.7	43.0	38.5	35.5	438.7
1989	29.3	28.5	32.2	35.7	45.1	36.4	32.8	41.5	40.0	44.2	40.2	31.1	437.1
1990	39.3	33.9	39.0	33.4	38.4	32.9	32.6	39.0	36.6	38.9	38.0	31.8	433.7

[1] Includes GSA metal. *Source: American Bureau of Metal Statistics, Inc.* T.363

Lumber & Plywood

U.S. housing starts fell by 13 percent in 1990 to 1.193 million dwelling units, according to preliminary Commerce Department data. The decline steepened as the year ended. December 1990 starts were put at a seasonally adjusted annual rate of 987,000. That was the first time since June 1982 that starts were below 1 million. Building permits issued fell by 18 percent in 1990 to 1.1 million dwelling units.

In dollars, residential construction fell by 14 percent to $105 billion from $123 billion in 1989, according to F.W. Dodge, the construction statistics unit of McGraw Hill. Nonresidential construction, which includes office buildings, power plants, and shopping malls, fell by 13 percent to $86 billion. Dodge's Construction Index dropped to 130 in December 1990 from 170 a year earlier (1982=100). Total construction value for the year fell by 11 percent to $240 billion.

Since about 80 percent of the softwood lumber and structural panels produced in the U.S. goes into construction, 1990 was a tough year for the industry. U.S. industry shipments of wood products totaled $57.9 billion. Adjusted for inflation, that was down 1.5 percent from 1989 and almost 10 percent from 1987. The economy lapsed into recession in late 1990. The National Association of Home Builders predicted that 1991 housing starts would bottom out at 1.1 million units. Demand for wood products was not expected to improve for awhile.

While the median price of a new single-family home rose by 5.8 percent in 1990 to $127,000 and was forecast to increase by 8.7 percent in 1991, the trend toward larger, fancier homes that began after 1982 was slowed by the recession that began in 1990. The index of amenities in the average new single-family home was unchanged in 1990 at 148 of its 1982 base and was projected to go to 149 in 1991. Most homes built in 1990 were for the trade-up market; high land costs and construction costs continued to inhibit construction of starter homes.

U.S. lumber production totaled 48.5 billion board feet in 1989 (37.5 billion of softwood and 11 billion of hardwood) and was expected to dip to about 48 billion board feet in 1990. Further declines in output were expected in 1991, because of the recession and the logging restrictions imposed in the Pacific Northwest, after the northern spotted owl was listed as threatened under the Endangered Species Act in June 1990. In September, a Bush Administration panel recommended a target of 3.1 billion board feet in fiscal 1991 for timber sales from national forests in the Pacific Northwest. The compromise did not satisfy loggers, who feared the loss of up to 20,000 jobs, nor were environmentalists satisfied. The Forest Service had planned to sell 3.85 billion board feet from those forests in fiscal 1990, but actual sales were closer to 3.5 billion.

Nevertheless, output was larger than the market could absorb. According to a private estimate, 53 sawmills and panel plants in Oregon, Washington and Idaho closed in 1990, including 21 sawmills and 32 plywood, panel, and veneer operations. According to a Commerce Department report, up to 9 percent of the 638 sawmills operating in the Northwest in 1990 could be closed on a long-term basis by 1992 because of the combination of log shortages and sluggish demand. Closures were also widespread in Canada.

In Canada, the strength of the Canadian dollar hurt sales to the U.S. Meanwhile, Canadian mills wanted changes in the 1986 Memorandum of Understanding, the rules governing Canadian lumber trade. Under the Memorandum, Canadian mills faced large increases in stumpage fees in lieu of a 15 percent export tax on sales to the U.S. Canadian softwood accounted for 27 percent of U.S. consumption in 1990, versus 33 percent in 1985.

In the U.S., tight log supplies resulted in sharply higher stumpage prices. Pacific Northwest softwood sawtimber averaged $526 per thousand board feet in first-quarter 1990, up from $360 in the same period a year earlier. In an effort to combat this problem, Congress passed legislation in 1990 banning export of most logs harvested west of the 100th meridian beginning in 1991. Most of those exports go to Japan. It was hoped that concessions made by Japan in the 1990 U.S.-Japan Wood Products Agreement would lead to exports of products to replace the timber.

Futures Markets

Random lengths lumber futures and options on those futures are traded on the Chicago Mercantile Exchange.

U.S. Housing Starts: Seasonally Adjusted Annual Rate In Thousands (Total Is Actual Starts)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sep.	Oct.	Nov.	Dec.	Total
1983	1,586	1,699	1,606	1,472	1,776	1,733	1,785	1,910	1,710	1,715	1,785	1,688	1,703
1984	1,897	2,260	1,663	1,851	1,774	1,843	1,732	1,586	1,698	1,590	1,689	1,612	1,750
1985	1,711	1,632	1,800	1,821	1,680	1,676	1,684	1,743	1,676	1,834	1,698	1,942	1,742
1986	1,972	1,848	1,876	1,933	1,854	1,847	1,782	1,807	1,687	1,681	1,623	1,833	1,805
1987	1,840	1,787	1,715	1,622	1,607	1,583	1,592	1,587	1,685	1,535	1,659	1,391	1,621
1988	1,391	1,511	1,528	1,576	1,392	1,463	1,478	1,459	1,463	1,532	1,567	1,577	1,488
1989[1]	1,678	1,465	1,409	1,343	1,308	1,414	1,424	1,325	1,263	1,423	1,347	1,273	1,376
1990[1]	1,568	1,488	1,307	1,216	1,206	1,189	1,153	1,131	1,107	1,041			

[1] Preliminary. *Source: Bureau of the census.*

Salient Statistics of Lumber in the United States

	Industrial Roundwood Used for								Fuelwood Consumption	Consumption All Pdt's.	National Forest Stumpage Prices					
	Production															
Year	Lumber	Pulp Products	Plywood & Veneer	Other Pdts.[2]	Total[2]	Total Imports	Total Exports	Total Consumption			All Eastern Hardwoods	Douglas Fir	Southern Pine	Western Hemlock	Ponder-[illegible] Pine	Maple Sugar
	In Million Cubic Feet										$ Per 1,000 Board Ft.					
1981	4,780	4,125	1,180	425	11,150	3,165	2,090	12,225	3,180	15,405	50.90	350.20	172.00	163.40	195.20	67.80
1982	4,635	3,980	1,135	435	10,910	3,015	1,995	11,930	3,355	15,285	56.40	118.20	127.20	44.50	66.90	71.10
1983	5,370	4,165	1,365	445	12,065	3,710	2,110	13,665	3,235	16,900	60.10	161.60	140.60	62.20	104.00	55.10
1984	5,770	4,355	1,400	455	12,725	4,165	2,060	14,830	3,620	18,450	90.10	132.90	139.40	61.80	122.70	80.50
1985	5,665	4,165	1,420	465	12,515	4,340	2,070	14,785	3,450	18,235	65.40	126.20	90.70	50.50	101.40	70.00
1986	6,545	4,545	1,505	475	13,845	4,375	2,300	15,920	3,115	19,030	69.90	160.70	103.60	74.70	156.60	66.20
1987[1]	6,990	4,670	1,560	490	14,575	4,590	2,655	16,510	3,035	19,545	88.10	190.20	135.70	105.40	209.30	80.50
1988[1]											151.30	256.00	141.90	162.90	182.10	108.40

[1] Preliminary. [2] Excludes fuelwood. Includes cooperage logs, poles & piling, fence posts, etc. *Sources: National Lumber Manufacturers Ass'n.; U.S. Dept. of Commerce; Forest Service* T.367

United States Lumber Shipments In Millions of Board Feet

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	2,424	2,379	2,752	2,755	2,633	2,765	2,395	2,431	2,260	2,382	2,045	1,989	30,834
1982	1,637	1,837	2,148	2,336	2,308	2,513	2,363	2,450	2,260	2,506	2,353	2,162	28,935
1983	2,435	2,290	2,632	2,683	2,775	2,764	2,537	2,669	2,737	2,795	2,404	2,445	35,239
1984	2,589	2,603	3,022	2,875	2,852	2,993	2,756	2,950	2,688	3,154	2,922	2,397	37,221
1985	2,666	2,602	3,013	3,496	3,349	3,031	2,944	3,294	3,162	3,221	2,828	2,809	37,023
1986	2,955	2,899	3,478	3,321	3,538	3,498	2,979	3,344	3,291	3,689	3,480	3,791	42,618
1987	3,350	3,302	3,735	3,686	3,656	4,039	3,671	3,812	3,540	4,034	3,470	3,865	47,761
1988	3,790	4,092	4,320	4,257	4,261	4,309	3,688	3,929	4,038	3,871	3,656	3,649	49,134
1989[1]	3,914	3,417	3,877	3,846	4,163	4,420	3,760	3,977	3,823	4,081	3,854	3,626	49,003
1990[1]	4,035	3,870	4,317	4,173	3,952	4,176	3,912	3,987	3,453	3,762			

[1] Preliminary. *Source: National Lumber Manufacturers' Association* T.368

Stocks (Gross) of Softwood[2] Lumber in the United States, Beginning of Month In Millions of Board Feet

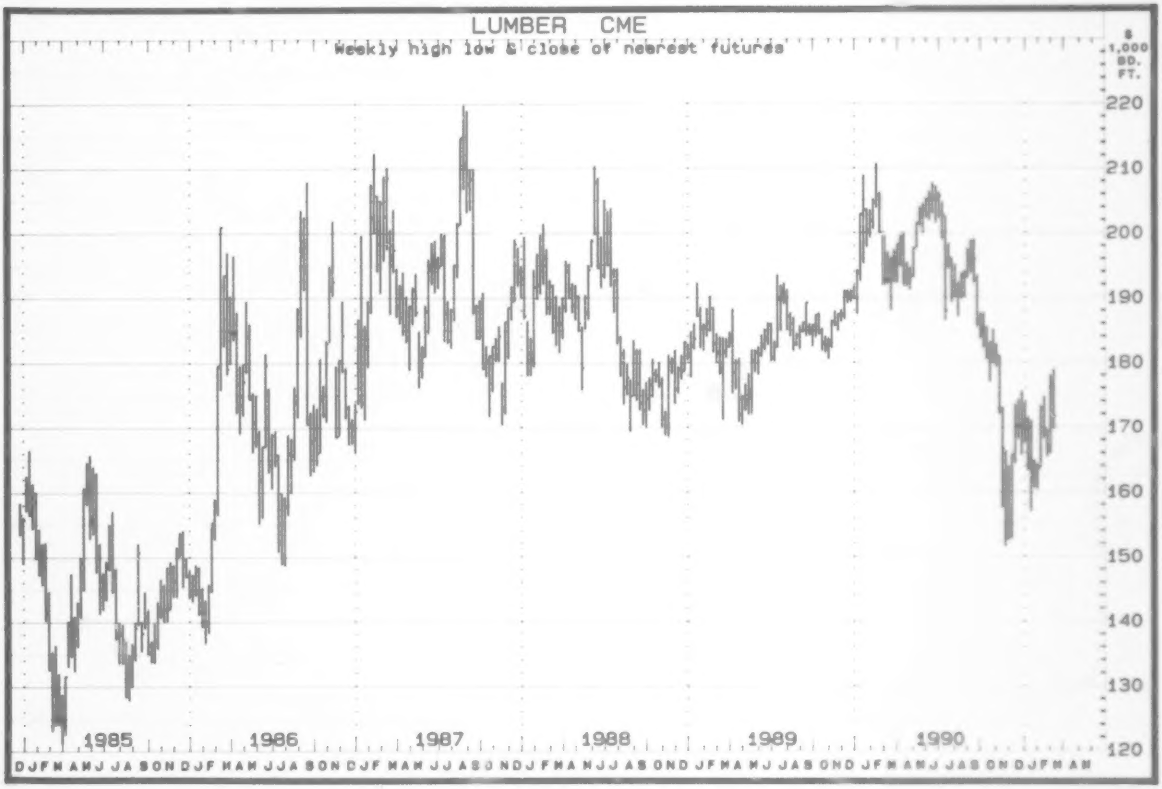
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981	5,800	5,883	6,065	6,098	6,123	6,213	6,015	6,103	6,232	6,284	6,285	6,075
1982	5,894	6,016	6,068	6,042	5,983	5,915	5,853	5,867	5,977	6,163	5,986	5,881
1983	5,809	5,770	5,950	5,997	5,924	5,824	5,772	5,817	5,858	5,870	5,862	5,964
1984[2]	4,606	4,424	4,494	4,602	4,717	4,715	4,658	4,560	4,509	4,573	4,515	4,590
1985	4,594	4,533	4,637	4,733	4,508	4,415	4,633	4,680	4,687	4,699	4,850	4,870
1986	4,765	4,842	4,959	4,846	4,886	4,748	4,605	4,615	4,722	4,840	4,929	5,038
1987	5,040	5,039	5,112	5,203	5,181	5,097	4,927	4,928	4,755	4,855	4,787	4,823
1988	4,771	4,867	4,950	4,994	4,939	4,894	4,685	4,677	4,765	4,823	4,951	4,979
1989[1]	4,999	4,896	4,818	4,837	4,810	4,740	4,746	4,748	4,797	4,762	4,908	4,934
1990[1]	4,898	5,022	5,022	5,020	4,961	5,043	4,831	4,783	4,752	4,810	4,834	

[1] Preliminary. [2] Prior to 1984 data includes hardwoods. *Source: National Lumber Manufacturers' Association* T.369

Lumber Production[1] in the United States In Millions of Board Feet

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	2,523	2,542	2,818	2,780	2,651	2,588	2,483	2,554	2,307	2,379	1,831	1,765	30,928
1982	1,810	1,891	2,148	2,281	2,251	2,338	2,376	2,560	2,445	2,333	2,247	2,004	28,849
1983	2,484	2,481	2,682	2,623	2,645	2,718	2,585	2,714	2,748	2,787	2,504	2,345	35,370
1984	2,740	2,678	3,104	2,983	2,828	2,968	2,685	2,933	2,776	3,154	2,814	2,295	37,436
1985	2,727	2,718	3,085	3,296	3,256	3,101	3,034	3,299	3,196	3,387	2,851	2,649	37,352
1986	3,092	3,046	3,347	3,362	3,405	3,355	2,961	3,441	3,397	3,820	3,496	3,623	42,676
1987	3,293	3,307	3,742	3,616	3,518	3,905	3,662	3,737	3,617	3,942	3,458	3,829	49,395
1988	3,814	4,042	4,389	4,247	4,245	4,137	3,671	4,056	4,180	4,040	3,715	3,641	49,576
1989[2]	3,849	3,311	3,758	3,773	4,025	4,273	3,683	4,023	3,787	4,172	3,811	3,615	48,533
1990[2]	4,160	3,862	4,300	4,121	4,084	3,944	3,976	4,060	3,602	3,898			

[1] Adjusted with Census reports on lumber production. [2] Preliminary. *Source: National Lumber Manufacturers' Association* T.374



Average Open Interest of Lumber Futures at Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct	Nov	Dec
1983	9,886	11,091	10,192	11,340	10,258	8,801	8,292	8,579	8,610	7,557	6,413	7,020
1984	7,907	8,295	8,592	9,082	8,305	7,628	7,426	7,822	8,094	8,354	9,197	9,605
1985	9,953	9,704	8,102	9,115	9,115	10,038	8,823	8,672	7,672	7,247	6,819	6,567
1986	5,486	6,121	8,8[illegible]6	9,287	8,171	6,112	5,441	5,197	5,701	5,262	5,275	5,732
1987	6,077	7,330	6,4[illegible]	6,950	6,019	6,770	6,563	7,439	6,961	7,247	6,579	6,572
1988	6,212	6,701	5,791	6,395	5,548	5,644	5,586	6,272	5,527	5,697	5,368	5,919
1989	7,982	7,484	7,436	8,244	7,363	7,921	8,248	8,055	7,065	7,192	6,600	6,167
1990	6,078	6,061	4,991	4,957	4,538	4,359	3,570	3,028	2,881	3,105	2,632	2,001
1991	1,922											

Source: Chicago Mercantile Exchange T.370

Volume of Trading of Lumber Futures at Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	51,268	45,193	44,717	44,116	40,828	47,512	34,624	35,432	29,835	47,761	51,046	44,387	516,619
1983	54,976	56,706	51,520	48,327	77,107	73,554	62,053	76,322	68,019	68,228	44,266	49,925	731,003
1984	51,170	70,031	57,075	68,314	88,009	59,592	60,156	65,739	60,035	61,012	52,496	59,939	753,568
1985	71,719	55,737	56,718	65,762	62,766	57,422	43,525	39,151	36,517	34,703	29,556	27,972	581,548
1986	29,570	34,647	61,718	64,176	44,778	49,929	35,203	42,212	44,961	35,847	28,912	30,577	502,530
1987	40,351	49,167	40,504	39,211	27,954	33,505	31,345	38,876	34,039	39,437	32,052	30,648	437,089
1988	35,451	32,410	32,886	30,386	28,100	37,508	27,550	33,454	29,743	24,632	26,131	23,238	371,489
1989	29,963	25,857	23,947	31,427	26,789	26,712	20,258	19,514	18,790	18,965	17,286	14,395	273,903
1990	27,416	21,914	20,948	18,362	19,053	16,084	16,465	13,446	8,914	11,839	15,794	11,749	201,984
1991	10,535												

Source: Chicago Mercantile Exchange T.371

Residential Construction Contracts Awarded (All Types) in U.S. In Millions of Dollars

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	4,227	4,167	5,957	6,617	5,855	5,805	5,810	4,726	4,704	4,718	3,648	3,677	60,164
1982	2,991	3,045	4,542	4,645	5,060	5,674	5,188	5,354	5,560	5,548	5,784	5,401	59,210
1983	5,080	4,942	7,945	7,859	8,594	10,223	8,532	9,113	8,698	8,223	7,604	6,596	93,567
1984	6,809	6,989	9,085	9,518	10,831	9,879	8,845	9,162	8,062	8,494	7,489	5,956	101,389
1985	6,684	6,192	9,884	10,111	10,523	9,595	10,240	9,971	9,465	9,878	8,295	7,542	108,662
1986	7,443	7,208	10,002	12,416	12,033	11,923	11,463	10,710	10,699	11,197	8,750	8,507	122,896
1987	7,874	7,920	11,228	11,577	10,664	11,612	11,441	10,879	10,445	10,290	8,432	8,716	121,128
1988	6,739	7,997	11,031	10,679	11,686	12,430	10,099	11,788	10,519	10,473	9,450	8,897	121,940
1989[1]	7,515	7,137	10,118	10,999	11,389	11,568	10,318	11,554	10,159	10,517	9,278	7,442	120,436
1990[1]	7,579	7,240	9,940	9,722	10,946	10,433	9,745	9,941	8,463	8,678	7,008	5,308	105,003

[1] Preliminary. *Source: F. W. Dodge Co.* T.372

United States Imports of Sawmill Products In Ths. of Metric Feet Beginning 1986[2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	879	933	1,055	885	1,153	1,099	1,048	1,090	1,057	1,118	1,092	885	12,294
1984	941	1,135	1,108	1,098	1,073	1,172	1,202	1,191	1,298	1,185	1,104	1,108	13,615
1985	967	1,190	1,212	420	1,431	1,445	1,318	1,308	1,307	1,395	1,146	1,039	14,178
1986[2]	2,627	2,735	3,127	3,257	3,394	3,330	3,762	3,002	3,148	2,388	1,895	1,808	34,473
1987	2,544	2,884	3,136	3,051	3,144	3,264	3,136	2,790	3,420	2,983	2,856	2,705	35,912
1988	2,339	2,676	3,158	2,799	2,971	3,318	2,884	2,799	2,846	2,872	2,695	2,190	33,547
1989[1]	6,026	5,036	5,868	5,405	5,432	5,301	4,205	6,479	5,146	5,766	5,778	3,913	64,355

[1] Preliminary. [2] Prior to 1986 data are in millions of board feet. *Source: Department of Commerce* T.373

High, Low & Closing Prices of May Lumber Futures at Chicago In Dollars per 1,000 Board Feet

Year of Delivery		Year Prior to Delivery										Delivery Year					Life of Delivery Range
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1982	High	—	—	—	220.3	214.3	201.5	186.0	183.0	182.8	180.0	166.5	153.1	151.9	145.2	127.5	220.3
	Low	—	—	—	204.6	199.0	183.3	160.0	157.1	162.4	163.4	147.6	142.7	137.5	120.6	115.5	115.5
	Close	—	—	—	211.0	199.3	184.0	163.2	164.8	179.2	169.1	154.0	142.9	142.4	126.8	122.6	—
1983	High	192.7	186.5	178.4	171.0	168.5	170.9	169.3	179.6	191.7	195.3	209.5	206.6	194.6	193.6	221.7	209.5
	Low	180.0	172.0	170.0	151.5	154.8	155.2	157.6	157.9	178.6	181.1	189.8	190.7	183.8	182.7	191.5	151.5
	Close	185.0	174.0	175.5	157.5	158.6	166.0	159.7	178.7	185.9	191.0	204.9	190.7	184.6	193.2	217.2	—
1984	High	237.1	240.1	245.5	234.5	231.0	221.5	213.7	217.6	209.4	205.0	194.3	199.7	201.9	188.2	150.4	245.5
	Low	228.8	228.6	222.9	221.0	214.0	200.4	195.3	198.5	196.8	189.5	184.0	182.0	186.0	148.2	125.1	125.1
	Close	231.8	239.5	230.6	228.5	214.8	207.4	213.0	199.3	202.8	194.2	185.7	197.0	186.7	148.6	130.8	—
1985	High	219.0	215.5	187.0	178.7	167.5	176.2	165.0	171.3	174.1	174.0	176.7	163.0	148.3	147.4	149.9	225.0
	Low	214.0	185.6	167.0	160.5	147.4	153.5	151.0	154.0	165.9	158.5	163.0	146.6	121.1	122.5	136.1	121.1
	Close	215.5	185.6	175.5	166.0	154.2	155.5	157.5	169.5	170.8	173.3	164.0	147.0	124.2	137.4	148.7	—
1986	High	164.5	173.0	176.4	176.0	170.5	158.7	154.9	158.2	160.5	161.9	156.6	161.9	197.0	196.5	189.5	197.0
	Low	153.0	154.0	162.0	165.5	154.5	145.2	145.6	147.7	153.0	155.0	143.3	140.0	159.1	169.0	175.1	140.0
	Close	155.0	163.0	171.1	168.1	156.9	150.3	152.7	157.4	157.9	158.1	144.3	159.9	183.9	177.4	180.6	—
1987	High	173.0	172.5	172.0	174.5	169.4	177.1	179.0	176.0	172.1	173.5	181.2	198.5	203.6	193.9	193.7	203.6
	Low	160.0	161.1	163.2	162.3	155.5	159.0	162.0	162.0	163.0	159.5	158.8	177.1	184.0	178.8	183.2	155.5
	Close	167.0	166.0	166.3	163.5	159.9	172.0	166.6	170.5	165.6	160.0	179.5	189.0	192.4	185.9	187.7	—
1988	High	—	—	—	171.0	170.8	184.5	183.0	179.5	176.8	188.3	192.0	197.9	190.3	195.7	190.3	197.9
	Low	—	—	—	164.5	168.0	169.5	172.1	165.6	166.5	173.7	177.6	184.3	181.5	186.6	175.7	164.5
	Close	—	—	—	169.0	169.9	181.5	172.1	168.4	174.6	181.8	189.1	185.4	188.6	190.1	179.1	—
1989	High	177.2	180.0	178.5	181.7	184.0	179.7	181.4	184.6	184.9	190.4	194.5	193.6	185.7	188.2	178.2	194.5
	Low	170.1	175.0	175.1	176.0	176.6	174.2	175.1	177.3	178.5	179.8	185.9	182.8	179.6	170.3	171.9	170.1
	Close	173.0	176.8	178.2	177.1	177.5	178.9	177.5	182.4	181.3	189.0	188.3	183.4	183.5	174.5	172.3	—
1990	High	—	193.2	193.5	194.7	196.7	195.9	195.8	195.7	194.5	196.9	203.4	205.9	198.2	199.9	203.9	205.9
	Low	—	188.6	189.0	191.2	192.1	190.7	191.5	190.2	189.8	191.4	192.3	194.1	190.3	191.2	193.7	188.6
	Close	—	190.5	191.0	193.0	195.2	192.5	194.3	190.6	192.0	194.4	201.5	195.5	198.2	193.7	203.7	—
1991	High	—	201.5	205.1	207.9	206.5	206.8	206.9	198.7	195.9	177.5	174.0					
	Low	—	196.5	198.0	201.5	202.0	203.1	197.3	191.4	159.1	159.8	162.8					
	Close	—	198.5	201.0	206.1	206.5	206.6	198.4	193.5	159.7	173.5	164.3					

Source: Chicago Mercantile Exchange T.377

Average Index Price of Softwood Plywood, Western (Inland & Other Non-Southern) 1982 = 100[1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1980	293.8	308.0	302.3	256.9	275.4	301.7	324.5	346.2	324.0	324.2	330.3	343.3	310.9
1981	326.4	330.0	323.3	332.2	319.7	329.4	322.1	311.0	301.9	283.7	286.7	296.7	313.6
1982	291.3	288.4	288.7	283.5	279.2	287.6	282.3	278.8	274.9	272.5	276.5	284.6	282.4
1983	292.0	299.9	302.3	302.3	304.4	327.5	325.4	314.4	302.3	307.1	303.4	308.7	307.5
1984	312.4	320.1	318.0	308.7	289.7	288.8	290.3	308.6	305.2	307.2	302.4	302.4	304.5
1985	301.2	291.1	287.0	285.5	303.9	319.7	324.5	320.1	304.6	308.0	301.6	300.5	304.0
1986	300.1	298.2	312.2	329.5	321.1	311.0	310.1	307.7	311.2	309.9	308.4	304.4	310.3
1987[1]	109.0	113.2	114.2	109.8	107.4	107.0	108.3	112.8	120.5	111.3	112.7	110.7	111.4
1988	112.4	113.0	110.9	108.9	106.2	113.4	117.7	108.2	118.8	114.2	115.4	116.8	113.0
1989	119.4	125.6	127.3	129.2	130.4	126.5	132.9	124.5	132.1	142.6	137.2	125.5	129.4
1990	125.9	129.3	128.2	142.7	137.7	126.1	129.9	121.8	121.1	112.6	113.2		

[1] Data prior to 1987 are the index for 1967 = 100. *Source: Bureau of Labor Statistics* (0831–01) T.379

Average Index Price of Softwood Yellow Southern Pine (Dressed) Flooring (C & Better) 1982 = 100[1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1980	322.0	322.2	317.2	281.2	280.1	287.3	296.4	304.1	295.1	282.3	286.9	293.7	297.4
1981	291.9	292.2	294.7	308.4	313.9	309.5	297.0	291.6	279.4	273.6	267.0	279.7	291.6
1982	278.0	273.4	273.4	285.3	283.1	298.4	305.1	288.6	287.5	279.3	284.9	293.4	285.9
1983	303.0	314.8	319.3	321.3	325.5	334.9	330.0	323.4	308.3	313.5	316.2	328.2	319.9
1984	334.0	337.8	336.1	334.5	320.4	317.1	318.8	318.4	308.5	305.4	302.4	304.8	319.9
1985[1]	106.1	102.9	103.4	102.3	114.1	121.4	112.3	103.9	100.7	99.1	97.8	97.7	105.2
1986	101.0	101.0	106.4	113.5	110.9	107.1	105.8	106.2	103.3	100.7	101.1	101.5	104.9
1987	103.5	106.8	111.5	112.8	111.5	116.1	122.9	120.7	120.8	113.7	113.5	115.9	114.1
1988	118.1	119.6	118.4	118.6	115.7	115.2	114.9	106.3	101.6	102.9	108.5	109.5	112.4
1989	110.0	109.7	107.9	106.1	104.5	108.8	113.1	107.2	105.5	112.0	105.8	105.9	108.0
1990	106.9	110.0	112.4	116.8	119.5	116.0	116.3	114.0	110.5	104.0	104.0	101.8	111.0

[1] Data prior to 1985 are the index for 1967 = 100. *Source: Bureau of Labor Statistics* (0811–02) T.381

Average Index Price of Rough Softwood Lumber—No. 2 1982 = 100[1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1982	97.1	96.8	97.2	96.2	95.3	94.9	95.5	94.2	94.1	93.7	92.1	91.7	94.9
1983	91.1	94.0	94.0	98.5	99.0	100.2	100.2	98.9	96.3	95.8	94.6	95.1	96.5
1984	95.9	97.5	97.8	97.6	94.9	94.8	91.5	90.4	89.9	89.2	89.8	89.1	93.2
1985	90.2	90.2	88.9	88.4	88.5	89.0	88.4	89.8	88.1	87.6	87.2	87.1	88.6
1986	86.2	86.7	87.9	89.4	90.0	90.2	90.3	90.6	90.5	90.7	91.2	92.0	89.6
1987[1]	97.8	98.4	100.4	101.7	103.1	103.0	104.2	105.8	108.7	106.6	106.3	105.6	103.5
1988	105.2	106.4	109.6	111.3	112.7	111.3	113.1	113.5	109.1	108.4	107.6	106.5	109.6
1989	108.4	113.8	116.0	119.0	122.6	120.1	123.1	123.2	121.3	122.0	117.2	116.2	118.6
1990	118.4	118.4	121.2	120.9	119.1	116.2	117.4	114.2	113.4	111.7	108.9		

[1] Data prior to 1987 are the index for Dec. 1980 = 100. *Source: Bureau of Labor Statistics* (0811–04) T.380

Average Index Price of Douglas Fir Softwood Lumber—Dressed 1982 = 100[1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1979	357.2	360.1	371.0	381.1	381.8	378.3	387.4	408.4	424.0	410.4	378.7	368.8	383.9
1980	363.3	367.1	358.8	327.1	329.6	353.2	358.7	360.0	357.1	354.5	352.9	353.4	353.0
1981	347.2	330.4	321.8	332.7	328.5	333.1	320.1	318.3	296.8	277.6	268.0	267.0	311.8
1982	266.4	259.4	258.5	265.6	262.1	271.8	277.8	268.9	269.6	261.8	259.9	272.5	266.2
1983	312.1	370.3	376.2	375.5	390.2	404.7	407.0	381.4	345.3	332.0	318.7	324.7	361.5
1984	322.8	351.7	369.7	364.3	335.8	322.8	307.8	309.2	312.5	301.6	312.8	325.8	328.1
1985[1]	125.1	128.3	132.6	129.6	134.8	145.2	142.5	129.0	117.8	112.4	106.6	113.4	126.5
1986	118.0	114.0	118.7	130.7	134.6	124.4	128.3	127.5	129.7	125.3	123.7	119.3	124.5
1987	118.2	122.6	122.4	122.7	121.3	121.5	124.6	127.6	138.2	128.2	126.1	127.7	125.1
1988	129.8	130.9	131.6	134.2	132.0	135.7	140.6	138.6	142.7	140.5	138.7	133.6	135.7
1989	135.9	140.7	142.0	154.3	159.9	163.0	167.1	162.8	160.7	156.8	137.8	138.4	151.6
1990	141.2	144.8	146.7	149.5	141.8	137.4	143.2	139.9	136.2	125.1	122.9	127.3	138.0

[1] Data prior to 1985 are the index for 1967 = 100. *Source: Bureau of Labor Statistics* (0811–01) T.382

Magnesium

Magnesium prices showed little movement during 1990, closing out the year at the same levels as in 1989. Primary magnesium ingot was quoted at $1.63 a pound, and diecasting alloy was $1.43 a pound.

Though the metal's principal use is as an alloying addition to aluminum, and offtake is directly tied to the aluminum consumption cycle, 1990's better aluminum prices didn't translate into higher magnesium prices.

Magnesium inventories showed sucessive gains from 1989's low of around 12,000 tons to about 22,000 tons in the second quarter of 1990. Inventories rose during periods of reduced shipments, suggesting slack demand for the metal.

In the first eight months of 1990, U.S. imports totaled 16,006 tons of total magnesium content, compared with 12,290 tons in full-year 1989. Imports of metal and scrap containing magnesium showed a sharp increase during 1990, partly because of the start-up of new magnesium fabricating plants in Canada. For the first eight months of 1990, imports of metallic and scrap magnesium were 12,418 tons, above the level in all of 1989.

Alloy imports in January to August 1990 were 2,895 tons, versus 1989's full-year total of 3,830 tons.

Exportation of magnesium is the larger and more important part of the business. However, the first eight months showed a decided slowdown in activity. The U.S. Bureau of Mines reported that 28,387 tons of magnesium metal and scrap were exported in the first eight months, compared with 1989's full-year total of 44,639 tons. This sector accounted for the bulk of the 34,399 tons of magnesium metal content that was exported in January to August of 1990 and the 56,634 tons of total magnesium exports for all of 1989.

The U.S. is the world's largest producer of magnesium, followed by the USSR and Norway.

World Production of Magnesium (Primary and Secondary) In Metric[3] Tons

	Primary											Secondary Production			
Year	Brazil	Canada	China	France	Italy	Japan	Norway	USSR	United States	Yugoslavia	World Total[1]	Japan	United Kingdom	United States	USSR
1978	—	9,159	6,600	9,370	10,668	12,304	43,166	77,000	149,463	0	317,755	12,057	3,000	36,228	N.A.
1979	—	9,937	6,600	9,968	9,653	12,531	48,697	79,000	162,464	0	338,850	18,058	3,000	37,222	8,000
1980	—	10,199	7,700	10,282	8,693	10,199	48,890	83,000	169,477	0	348,440	26,314	3,000	40,461	8,000
1981	—	9,370	7,700	8,006	11,900	6,247	52,472	86,000	153,782	4,254	339,731	31,345	2,100	46,256	9,000
1982	331	8,700	7,700	10,593	10,960	6,123	39,598	89,000	102,197	4,697	279.899	23,887	1,940	43,232	9,000
1983	551	6,600	7,700	12,208	8,473	6,643	32,897	91,000	115,431	5,252	286,755	14,343	1,900	46,329	9,000
1984	1,323	8,800	7,700	14,299	8,257	7,830	54,343	94,000	159,207	4,700	360,459	17,258	1,102	48,357	9,000
1985[3]	2,615	7,200	3,000	13,639	7,863	8,456	54,704	87,000	135,728	4,978	325,183	20,894	9	41,298	8,000
1986	4,356	5,100	3,000	13,361	12,417	8,116	56,522	89,000	125,639	4,897	322,408	14,415	1,000	41,807	8,000
1987	5,488	8,800	3,000	13,601	7,626	8,180	56,907	90,000	124,396	5,932	323,930	10,284	1,000	45,165	8,000
1988[2]	5,865	7,600	3,200	13,800	5,436	9,012	50,300	91,000	141,983	6,176	334,372	10,020	1,000	50,207	8,000
1989[1]	6,200	7,200	3,200	13,900	2,770	11,385	49,827	91,000	152,066	6,000	343,548	12,000	1,000	51,200	8,000
1990[1]	6,000	35,000	3,000	15,000	5,000	13,000	55,000	91,000	150,000	6,000	379,000			50,000	

[1] Estimate. [2] Preliminary. [3] Data prior to 1985 are for short tons. *Source: Bureau of Mines* T.383

Salient Statistics of Magnesium in the United States In Metric Tons[7]

	Production								Domestic Consumption of Primary Magnesium					
		Secondary							Structural Products					
Year	Primary (Ingot)	New Scrap	Old Scrap	Total	Exports[2]	Imports for Consumption	Stocks Dec. 31[3]	$ Price per Pound[4]	Castings	Wrought	Total	Alumin. Alloys	Other Uses[5]	Total
1978	149,463	22,135	14,093	36,228	41,807	6,668		.99–1.01	7,651	11,075	18,726	58,798	31,434	108,958
1979	162,464	23,340	13,882	37,222	54,280	4,754		1.01–1.09	7,460	11,562	19,022	60,549	29,273	108,844
1980	169,477	22,907	17,554	40,461	56,761	3,757		1.07–1.25	5,847	11,620	17,467	54,490	23,831	95,788
1981	153,782	22,073	24,183	46,256	34,855	6,897		1.25–1.34	4,951	10,376	15,327	50,518	25,616	91,461
1982	102,197	19,801	23,431	43,232	39,613	4,784		1.34	3,600	10,128	13,728	39,878	20,993	74,599
1983	115,431	21,591	24,738	46,329	46,690	6,350		1.38	3,341	11,435	14,776	46,026	21,174	81,976
1984	159,207	21,594	26,763	48,357	48,337	9,381	39,000	1.43–1.48	4,193	10,246	14,439	48,673	26,775	89,887
1985[7]	135,728	19,579	25,944	41,298	36,680	8,411	39,000	1.48–1.53	4,536	10,840	15,376	31,059	31,317	83,752
1986	125,639	20,737	25,347	41,807	39,909	8,355	39,000	1.53	5,767	10,223	15,990	36,804	26,167	78,961
1987	124,396	23,934	25,852	45,164	44,182	10,851	28,000	1.53	6,285	10,688	16,973	49,784	27,863	94,620
1988[6]	141,983			50,207	49,802	14,407	25,000	1.58–1.63	7,069	12,626	19,695	51,183	29,915	100,793
1989[1]	152,006			51,200	56,631	12,289	26,000	1.63	7,455	12,038	19,493	51,436	34,297	105,226
1990[1]	150,000			50,000	50,000	25,000	30,000	1.63						110,000

[1] Estimate. [2] Metal & alloys in crude form, & scrap. [3] Producer & Consumer Stocks: Primary magnesium. Gov't. agencies continue to hold quantities of primary magnesium. [4] Magnesium ingots (99.8%) f.o.b. Valasco, Texas. [5] Distributive or sacrificial purposes. [6] Preliminary. [7] Data prior to 1985 are for short tons. *Source: Bureau of Mines* T.384

Manganese

Ferromanganese is used in steelmaking to neutralize the adverse effects of sulphur. The steel industry accounts for about 90 percent of U.S. demand for manganese materials, and the bulk of that is ferromanganese.

In the first eight months of 1990, ferromanganese consumption, which is broken down into high, medium, and low carbon, totaled 288,163 short tons, compared with full-year 1989's use of 438,982 tons. For the period, high-carbon ferromanganese usage totaled 220,747 tons, while medium and low-carbon use was 67,416 tons. In 1989, total high-carbon ferromanganese use amounted to 220,747 tons, and medium and low-carbon was 67,416 tons.

The U.S. doesn't mine its own manganese and relies entirely on imports to fulfill its needs. For the first eight months of 1990, total manganese content imports were 470,994 tons. Of that, imports of ore and dioxide amounted to 112,501 tons, compared with 1989's January through August total of 196,668 tons. Full-year 1989 imports of ore and dioxide totaled 262,104 tons.

Ferromanganese imports in the first eight months were 292,594 tons, versus full-year 1989 imports of 477,276 tons. High-carbon ferromanganese imports totaled 240,230 tons in the first eight months. Full-year 1989 imports amounted to 391,513 tons. South Africa is the largest source of high-carbon ferromanganese. In the first eight months of 1990, the U.S. imported 106,982 tons of South African high-carbon ferromanganese.

Medium-carbon ferromanganese imports for the first eight months totaled 43,519 tons, with Mexico supplying 16,844 tons. Full-year 1989 imports were 67,302 tons, of which Mexico accounted for 34,777.

Eight-month 1990 imports of manganese ore totaled 217,713 tons, compared with full-year 1989's 636,870 tons. Ore is categorized as 20 to 47 percent manganese content, and 47 percent and above. Manganese metal imports for the eight months were 7,975 tons, compared with 12,175 in full-year 1989.

Although it doesn't mine any manganese, the U.S. engages in manganese export trade, mainly with Canada and Mexico. Total manganese ore exports of 20 percent and above manganese content totaled 44,054 tons in the first eight months of 1990, compared with all of 1989's 57,191 tons.

Manganese nodules on the ocean floor have captured the attention of industrial concerns, and efforts are being made to exploit this resource.

World Production of Manganese Ore (Gross Weight) In Thousands of Short Tons

Year	Australia[3] 37–53[5]	Brazil 30–50	Bulgaria 29	China 30	Gabon 50–53	Ghana 30–50	Hungary[4] 30–33	India 10–54	Iran 25–35	Mexico 27–50	Morocco 50–53	South Africa 30–48+	USSR 29–30	Yugoslavia 25–45	World Total
1982	1,238	2,580	50	1,760	1,667	176	91	1,642		561	106	5,750	10,830	30	26,701
1983	1,510	2,306	50	1,760	2,047	191	65	1,412		386	81	3,181	10,890	35	24,147
1984	2,038	2,969	50	1,760	2,336	296	74	1,246	73	525	65	3,361	11,100	23	26,100
1985	2,208	2,781	42	2,900	2,579	351	69	1,367	61	437	48	3,969	10,900	28	27,948
1986	1,818	2,973	41	3,000	2,767	335	69	1,337	61	506	44	4,100	10,300	46	27,545
1987	2,043	2,279	42	3,000	2,649	303	86	1,435	61	425	47	3,188	10,400	46	26,134
1988[1]	2,189	2,144	44	3,000	2,485	286	89	1,459	66	489	33	3,807	10,000	48	26,300
1989[2]	2,341	1,800	44	3,000	2,900	350	83	1,500	66	473	33	3,994	9,700	45	26,483
1990[2]	2,300	1,900		3,100	2,800			1,400		430		4,100	9,500		26,300

[1] Preliminary. [2] Estimated. [3] Metallurgical Ore. [4] Concentrate. [5] Ranges of percentage of manganese. *Source: Bureau of Mines* T.385

Salient Statistics of Manganese in the United States In Thousands of Short Tons (Gross Weight)

		Manganese Ore (35% or More Mn)							Ferromanganese						Silico-manganese			
		Consumption by Use																
Year	Net Import Reliance as a % of Apparent Consumption	Alloys and Metal	Pig Iron Steel	Dry Cells, Misc.	Imports For Consumption	Exports	Consumption	Stocks, Dec. 31[2]	Domestic Production	Imports for Consumption	Exports	Consumption	Manganiferous ore[3] Shipments	Price Avg. Value Mn Metallurgical Value ore-$ Lg. ton unit[6]	Production	Shipments	Exports[4]	Imports[4]
1982	99	412.3	83.9	112.6	238	29	609	751	119.0	492.7	10.3	439.2	31.5	1.58	69	83	3.0	62.1
1983	99	274.3	105.5	150.9	368	19	531	617	86	341.6	8.4	446.3	33.5	1.38	N.A.	63	6.4	139.7
1984	98	N.A.	117.0	N.A.	338	238	615	582	N.A.	409.3	6.8	492.2	88.4	1.42	N.A.	N.A.	5.3	138.5
1985	100	262.7	90.0	247.0	387	56	545	589	N.A.	366.9	6.9	466.0	20.0	1.43	N.A.	N.A.	3.1	165.5
1986	100	N.A.	74.0	N.A.	463	42	500	455	N.A.	395.7	4.3	376	14	1.34	N.A.	N.A.	2.0	198.6
1987	100	N.A.	102.0	N.A.	341	63	533	456	N.A.	368	3	409	N.A.	1.29			.7	191.4
1988[1]	100	N.A.	138.0	N.A.	512	68	554	458		531	3	468	N.A.	1.78			7.5	232.2
1989[5]	100		135.0		639	57	616	518		476	9	440		2.80			5.9	255.4
1990[5]	100				300	50	580	465		440	5	435		3.95				

[1] Preliminary. [2] Including bonded warehouses; excludes Gov't stocks; also excludes small tonnages of dealers' stocks. [3] 5 to 35% Manganese. [4] Gross Weight. [5] Estimate. [6] 46–48% Mn. C.I.F. U.S. Ports. *Source: Bureau of Mines* T.386

MANGANESE

U.S. Consumption of Manganese by End Uses In Thousands of Short Tons

Year	Appliances & Equipment	Batteries	Cans & Containers	Chemicals	Construction	Machinery	Oil & Gas Indus.	Transportation	Other	Total
1979	59	17	61	59	291	217	70	296	180	1,250
1980	50	17	50	50	245	165	80	215	157	1,029
1981	50	16	45	50	250	170	90	215	141	1,027
1982	30	21	31	29	155	94	40	114	162	672
1983	33	25	28	22	168	102	28	124	162	668
1984	36	34	38	34	170	97	36	139	43	627
1985	32	39	35	22	164	78	34	124	170	698
1986	27	43	31	23	148	65	25	95	273	730
1987[1]	31	43	35	44	165	77	30	105	162	692
1988[2]										825

[1] Preliminary. [2] Estimate. *Source: Bureau of Mines; American Metal Market* T.390

Manganese Ore (35% or More Mn) Imported[2] into the U.S. In Thousands of Short Tons (Mn Content)

Year	Bel/ Lux.	Zaire	Brazil	Congo (Brazz.)	Canada	Ghana	Panama	Mexico	Morocco	Gabon	Australia	Turkey	South Africa	Total	Value Mill. $
1978	—	13.2	52.1	9.5	—	—	—	18.4	14.5	127.0	32.6	—	11.0	278.2	33.6
1979	—	—	51.7	22.5	—	—	—	2.1	10.7	49.2	55.3	—	52.1	243.6	27.5
1980	—	—	33.6	—	—	—	—	18.6	5.3	79.9	106.0	—	86.4	329.8	46.4
1981	—	—	38.9	—	—	—	—	25.8	13.6	90.6	34.3	—	97.5	300.7	42.6
1982	—	—	3.0	—	1.7	—	—	1.5	5.0	23.2	18.8	—	57.9	111.1	16.2
1983	—	—	39.1	—	—	—	—	25.6	—	85.5	15.1	—	12.7	178.1	19.9
1984	—	—	44.3	—	—	—	—	16.3	—	66.1	21.0	—	17.3	165.0	16.0
1985	—	—	59.8	—	—	—	—	21.8	.1	64.1	43.1	—	—	188.8	22.6
1986	.2	—	38.7	—	—	—	3.2	14.8	.2	119.1	35.5	—	14.0	225.6	23.1
1987	—	—	29.7	—	—	—	—	3.7	.1	88.4	48.7	—	—	170.6	15.2
1988[1]	—	—	27.0	—	—	—	—	35.5	.1	146.7	39.3	—	—	248.6	29.1
1989[3]			93.3					9.8	—	109.6	60.4		21.6	298.5	43.8
1990															

[1] Preliminary. [2] Imported for consumption. [3] Estimate. *Source: Dept of Commerce* T.387

Average Price of Ferromanganese[1] (High Carbon[2]-F.O.B. Plant) In Dollars Per Gross Ton—Carloads

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1976	432½	432½	432½	432½	432½	432½	432½	432½	432½	432½	425	417½	430.63
1977	417½	417½	417½	399½	399½	399½	399½	399½	399½	399½	399½	399½	404.00
1978	399½	399½	399½	399½	422.17	425	425	425	425	425	425	425	416.26
1979	440	440	440	465	490	490	490	490	490	493	510	510	479.04
1980	510	510	510	510	510	510	510	510	510	510	510	510	510.00
1981	510	510	510	510	510	510	510	510	510	510	510	510	510.00
1982	510	510	510	510	510	510	510	510	510	510	510	510	510.00
1983	510	510	510	510	510	510	510	510	510	510	510	510	510.00
1984	510	510	510	510	510	510	510	510	510	No Quotes			510.00
1987	No Quotes				326.25	331.88	339.50	345	355	358	363	373	348.95
1988	382.50	382.50	414.50	422.50	435.63	440	457.50	475	530	550	550	550	465.84
1989													

[1] Domestic standard. [2] Prior to May 1987 prices are for 78% Mn-F.O.B. plant. *Source: American Metal Market.* T.389

Meats

U.S. meat production rose to a record 62.7 billion pounds in 1990. Red meat production dropped for the year, while poultry output was higher. Beef and pork production both declined from 1989 levels. Output of veal dropped slightly in 1990, while lamb and mutton were a little higher.

Total poultry production grew by more than 7 percent for the year. Broilers were up by about 6 percent to 18.6 billion pounds, and turkey production rose to about 4.7 billion pounds, a jump of almost 10 percent. Poultry production was likely to continue on its expansion path in 1991, and red meat was expected to increase as well.

Total U.S. per capita red meat and poultry consumption was nearly the same in 1990 as a year earlier at 227 pounds. The trend of the last several years has favored poultry consumption at the expense of red meat. Much of this has been due to health factors. Per capita broiler consumption surpassed beef in 1990, rising to almost 70 pounds, while per capita beef consumption declined to 67.6 pounds. However, demand for beef remained surprisingly strong, given high beef prices and a weakening economy. Per capita broiler consumption has nearly doubled since 1970.

Total poultry consumption rose to 90.3 pounds per capita in 1990, as turkey consumption grew by about 7 percent. Pork demand has remained relatively stable over the past decade, but dropped by more than 4 percent in 1990 to 60.2 pounds on a per capita basis. Total meat consumption was expected to rise in 1991, with poultry likely to continue its steady growth and red meat forecast to rise slightly for the first time in several years.

Reflecting production patterns in 1990, red meat prices rose from the previous year, while poultry prices declined. Consumers paid record prices for beef in 1990, as the number of cattle for slaughter was at a cyclical low. Despite plunging hog prices late in the summer, retail pork prices reached record levels late in the year.

Poultry prices were lower in 1990 than a year earlier, as broiler and turkey production both increased. Broiler prices were off sharply late in the year, due to high stocks and low seasonal demand, and prices for the year averaged below 1989's record levels. Turkey prices also dropped late in the year and averaged below 1989 levels.

World Total Meat[1] Production In Millions of Metric Tons

Year	Argentina	Australia	China[3]	Canada	Czechoslovakia	Denmark	France	West Germany	Japan	Italy	New Zealand	Poland	Brazil	South Africa	United Kingdom	United States	U.S.S.R.
1978	3.5	2.8		1.7	1.3	1.1	3.5	4.1	1.7	2.0	1.1	2.7	3.1	.8	2.2	17.5	13.3
1979	3.5	2.5		1.7	1.3	1.2	3.7	4.2	1.8	2.1	1.1	2.7	3.0	.9	2.2	17.1	13.2
1980	3.3	2.3		1.9	1.3	1.2	3.7	4.3	1.9	2.2	1.1	2.6	3.2	.9	2.3	17.7	12.6
1981	3.4	2.2		1.9	1.3	1.2	3.7	4.3	1.9	2.2	1.2	2.0	3.2	.8	2.3	17.7	12.7
1982	2.7	2.5		1.9	1.2	1.2	3.5	4.2	1.9	2.2	1.1	2.3	3.4	.9	2.2	17.0	12.7
1983	2.5	2.1	13.2	1.9	1.3	1.3	3.5	4.2	1.9	2.3	1.2	2.2	3.4	.8	2.4	17.8	13.6
1984	2.7	2.0	14.4	1.9	1.3	1.3	3.7	4.4	2.0	2.4	1.1	2.1	2.9	.9	2.4	17.8	14.0
1985	2.8	2.2	17.0	1.9	1.3	1.3	3.6	4.4	2.1	2.3	1.2	2.3	3.0	.9	2.4	17.9	14.1
1986	2.9	2.3	19.2	2.0	1.3	1.4	1.6	4.6	2.1	2.4	1.1	2.6	2.8	.8	2.3	17.8	14.6
1987	2.8	2.4	19.9	2.1	1.3	1.4	3.6	4.6	2.1	2.4	1.2	2.6	3.5	.8	2.4	17.5	15.5
1988[2]	2.7	2.4	21.9	2.2	1.4	1.4	3.5	4.5	2.1	2.4	1.8	2.6	3.6	.7	2.3	18.1	15.9

[1] Production of beef & veal, mutton & lamb, goat meat, & pork. Horsemeat included from 1976. [2] Preliminary. [3] Predominately pork production. *Source: Foreign Agricultural Service, U.S.D.A.* T.395

Production and Consumption of Red Meats in the United States (*Carcass Weight*)

Year	Beef			Veal			Lamb & Mutton			Pork (Excluding Lard)			All Meats		
	Comm. Production Mil. Lbs.	Consumption Total Mil. Lbs.	Consumption Per Capita Lb.[3]	Comm. Production Mil. Lbs.	Consumption Total Mil. Lbs.	Consumption Per Capita Lb.[3]	Comm. Production Mil. Lbs.	Consumption Total Mil. Lbs.	Consumption Per Capita Lb.[3]	Comm. Production Mil. Lbs.	Consumption Total Mil. Lbs.	Consumption Per Capita Lb.[3]	Production Mil. Lbs.	Consumption Total Mil. Lbs.	Consumption Per Capita Lb.[3]
1979	21,262	23,522	105.5	411	450	2.0	282	332	1.5	15,270	15,353	68.8	37,225	39,657	177.8
1980	21,469	23,320	103.4	379	410	1.8	310	345	1.5	16,431	16,574	73.5	38,590	40,648	180.2
1981	22,214	23,756	104.3	415	438	1.9	327	360	1.6	15,719	15,927	69.9	38,675	40,481	177.8
1982	22,366	23,998	104.3	423	457	1.99	356	381	1.65	14,121	14,425	62.6	37,266	39,261	170.5
1983	23,060	24,710	106.2	428	457	1.97	367	388	1.67	15,117	15,369	66.1	38,972	40,924	175.9
1984	23,418	24,900	106.1	479	503	2.14	371	398	1.70	14,720	15,396	65.6	38,988	41,197	175.5
1985	23,557	25,342	106.9	499	527	2.22	352	386	1.63	14,728	15,651	66.0	39,136	41,903	176.8
1986	24,213	25,935	107.4	509	550	2.3	331	375	1.6	13,998	15,008	62.1	39,051	41,868	173.3
1987	23,405	25,205	103.3	416	449	1.8	309	360	1.5	14,312	15,237	62.5	38,442	41,251	169.1
1988	23,424	25,252	102.5	387	412	1.7	329	387	1.6	15,623	16,559	67.2	39,763	42,610	173.0
1989[1]	22,974	24,326	97.8	344	356	1.4	341	406	1.6	15,759	16,569	66.6	39,418	41,657	167.4
1990[2]	22,629	24,007	96.3	321	328	1.2	359	418	1.7	15,311	16,075	64.0	38,620	40,828	162.7

[1] Preliminary. [2] Estimate. [3] Carcass weight. *Source: Economic Research Service, U.S.D.A.* T.400

Total Red Meat Imports (Carcass Weight Equivalent[2]) of Importing Countries In Thous. of Metric Tons

Year	Belgium & Lux.	Canada	Czechoslovakia	France	Rep. of Korea	W. Germany	Greece	Hong Kong	Italy	Israel	Japan	Netherlands	Spain	Switzerland	Un. Kingdom	United States	USSR
1977	121.2	194.3	21.4	556.2		627.0	110.9		612.9	30	649.0	175.3	59.2	26.0	1,280	1,100	496.2
1978	143.9	172.9	21.0	630.4		633.0	142.0		632.1	37	665.4	187.5	112.3	33.8	1,276	1,296	132.0
1979	99	140	21	541	108	648	140		684	71	610	149	124	25	1,245	1,348	469
1980	91	111	21	590	15	700	134		722	33	486	168	27	23	1,122	1,210	706
1981	88	110	21	579	45	687	80		690	55	612	146	16	31	1,072	1,058	786
1982	79	112	29	618	82	692	157	68	824	56	546	119	28	25	1,137	1,175	679
1983	107	121	25	676	78	728	216	82	832	46	599	108	26	27	1,072	1,212	779
1984	79	130	15	711	39	796	194	238	823	43	636	105	36	21	1,015	1,280	691
1985	79	132	15	760	19	843	208	296	948	47	647	116	36	15	955	1,476	587
1986	77	130	15	841	14	837	221	300	961	42	712	104	92	16	1,007	1,506	537
1987	78	157	15	829	16	880	246	281	952	41	869	109	90	20	1,036	1,602	495
1988[1]	76	170	15	872	45	940	232	313	955	44	994	135	93	18	1,071	1,630	353

[1] Preliminary. [2] Excludes fat, offals & live animals. *Source: Foreign Agricultural Service, U.S.D.A.* T.397

Total Red Meat Exports (Carcass Weight Equivalent[2]) of Principal Countries In Thousands of Metric Tons

Year	Argentina	Australia	Brazil	Canada	China	Denmark	France	Ireland	Romania	Netherlands	N. Zealand	Poland	United States	Un. Kingdom	USSR	Uruguay	Yugoslavia
1977	669.6	1,335	240.0	112.1		695.6	312.2	363.8		697.2	790.9	131.8	236.0	185	49.2	134.6	88.0
1978	823.7	1,377	178.1	117.1		753.4	267.2	359.3		751.6	724.7	141.0	256.6	177	38.0	118.8	113.4
1979	728	1,306	111	133		832	306	342		785	783	155	211	179	33	84	82
1980	487	1,087	170	182		857	362	453	208	843	796	141	195	228	35	128	98
1981	508	966	281	207		905	415	324	245	932	817	60	240	243	53	185	72
1982	546	1,184	361	247	230	909	401	311	160	879	846	52	213	194	32	182	107
1983	438	947	404	242	264	945	387	341	185	957	938	93	225	296	25	236	83
1984	266	747	483	280	273	952	489	301	177	1,066	815	68	227	344	27	142	98
1985	272	860	540	313	278	958	503	370	265	1,158	876	13	210	284	30	131	97
1986	261	1,031	355	376	222	1,007	649	473	280	1,216	863	122	279	306	14	198	55
1987	294	1,122	304	394	238	986	604	496	310	1,265	922	128	327	313	14	104	58
1988[1]	327	1,102	560	405	287	1,005	645	451	305	1,334	901	131	402	270	13	142	52

[1] Preliminary. [2] Excludes fat, offals & live animals. *Source: Foreign Agricultural Service, U.S.D.A.* T.398

United States Meat Exports by Type of Product In Metric Tons

	Beef and Veal			Pork			Other Pork Prepared or Preserved					
Year	Fresh, chilled & frozen	Prepared & Preserved	Lamb & mutton, fresh or frozen	Fresh, chilled & frozen	Hams & shoulders, cured	Bacon	Not canned	Canned	Sausage, bologna, & frankfurters	Variety meats, fresh chilled & frozen[1]	Other meats[2]	Total
1977			1,755	116,282	2,941	1,216	2,919	1,810	3,426			
1978	40,390	14,878	1,375	84,120	3,934	1,655	7,524	2,932	3,653	181,164	67,549	409,174
1979	45,908	11,495	562	83,058	3,380	912	8,912	1,123	3,003	164,125	64,631	387,109
1980	48,255	11,248	595	69,966	3,327	820	8,438	1,667	3,296	195,182	69,532	412,326
1981	62,371	12,297	972	86,652	2,363	1,079	9,130	1,662	3,819	206,891	56,102	443,338
1982	71,621	14,046	676	58,541	1,358	774	7,514	1,289	3,404	222,688	48,924	530,835
1983	80,976	12,070	632	62,141	1,794	601	5,581	695	3,139	213,155	35,311	416,095
1984	99,208	12,322	878	46,098	1,474	621	3,837	513	2,603	213,180	34,432	415,166
1985	99,923	9,605	460	34,394	1,175	450	4,066	638	2,908	239,451	37,712	430,782
1986	173,884	10,519	558	20,969	650	474	4,796	349	3,214	241,051	46,130	502,594
1987	200,180	10,789	668	29,145	1,227	617	3,597	376	4,582	222,342	61,206	534,729
1988[3]	214,530	14,083	619	54,598	2,138	1,045	4,924	268	8,439	302,087	74,160	676,891

[1] Edible animal organs. [2] Includes sausage ingredients, cured (excluding canned); meat and meat products canned (n.e.s.); and baby food, canned. [3] Preliminary. *Source: Foreign Agricultural Service. Compiled from reports of the U.S. Department of Commerce* T.399

U.S. Imports of Meats and Meat Preparations In Thousands of Metric Tons[2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	127	106	160	169	167	215	158	234	246	194	124	114	2,015
1983	208	177	170	178	187	176	189	181	171	169	123	104	2,030
1984	180	167	171	198	161	128	209	198	189	226	175	159	2,160
1985[2]	88	81	94	97	97	100	104	105	103	90	89	91	1,139
1986	102	89	89	81	82	97	118	105	105	101	108	76	1,154
1987	96	99	107	109	101	122	126	111	113	111	87	71	1,250
1988	132	108	127	112	104	125	99	114	91	88	89	74	1,263
1989[1]	114	86	96	91	98	94	91	95	74	87	89	93	1,110

[1] Preliminary. [2] Data Prior to 1985 are in *millions of pounds*. *Source: Dept. of Commerce* T.401

United States Meat Imports by Type of Product In Metric Tons

	Beef and Veal			Lamb, Mutton, & goat, except canned	Pork							
Year	Fresh or frozen[1]	Canned, including sausage	Other prepared or preserved[2]		Fresh and frozen	Canned[3]	Other prepared or preserved[2]	Sausage, all types[4]	Mixed sausage	Other meats n.s.p.f.[5]	Variety meats, fresh or frozen	Total
1981	544,610	34,932	23,303	14,384	98,226	94,102	1,496	1,935	2,103	4,291	3,560	822,942
1982	607,184	37,747	17,402	8,649	125,282	96,831	1,547	2,372	2,242	4,408	2,823	906,487
1983	565,997	59,073	16,766	8,752	121,707	125,593	2,300	2,176	1,911	3,606	3,935	911,814
1984	516,960	57,863	19,864	8,693	207,703	142,423	3,372	2,243	2,121	5,088	5,707	972,037
1985	594,476	64,277	18,314	15,565	254,538	160,802	6,312	2,192	2,672	5,305	5,622	1,130,075
1986	637,718	45,779	20,778	16,596	263,488	151,730	8,221	2,640	2,849	4,621	6,475	1,160,895
1987	671,153	56,653	17,450	17,204	301,585	147,796	9,387	2,688	4,222	4,126	9,590	1,241,854
1988[6]	703,414	66,919	10,367	19,239	281,965	143,357	10,214	2,906	2,732	3,977	8,905	1,253,997

[1] Includes prepared items. [2] Includes pickled and cured. [3] Includes canned hams, shoulders, and bacon. [4] Includes fresh and cured sausages. [5] Mostly mixed luncheon meats. [6] Preliminary. *Source: Foreign Agricultural Service. Compiled from reports of the U.S. Department of Commerce.* T.402

U.S. Exports of Meat and Meat Preparations In Thousands of Metric Tons[2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	143	141	169	148	189	180	128	144	123	174	154	153	1,847
1982	129	147	124	131	167	147	111	108	112	133	143	115	1,566
1983	114	104	136	133	115	118	121	99	130	127	134	119	1,449
1984	112	104	134	106	114	103	128	119	123	139	121	119	1,422
1985[2]	54	50	54	51	53	53	59	63	54	63	55	56	663
1986	56	56	56	60	63	55	57	67	72	85	77	78	781
1987	68	60	68	71	80	76	80	81	82	80	87	82	915
1988	72	69	75	81	87	90	93	105	99	102	103	105	1,081
1989[1]	84	91	108	105	110	119	116	117	101	121	122	109	1,301

[1] Preliminary. [2] Data prior to 1985 are in *millions of pounds*. *Source: Dept. of Commerce* T.403

Average Wholesale Prices of Meats In Cents Per Pound

	Composite Retail Price										
Year	of Beef Grade 3 (Choice)	of Pork[3]	Net Farm Value of Pork[5]	Cow Beef Canner & Cutter Midwest	Boxed Beef[7] Cut-out Choice, 1–3 550–700 lbs. Centr. U.S.	Fresh Beef, Steer Carcasses Choice, E. Coast	Lamb Carcasses Choice & Prime (55-65 Lb.) East Coast	Pork[6] Loins (14–18 lbs) Midwest	Hams Skinned, Smoked 14-17 Lb. Midwest	Pork[1] Bellies 12-14 lbs. Midwest	Live Broilers Georgia
1981	238.7	152.4			99.84	99.8	127.67	113.70	95.55	68.38	26.5
1982	242.5	175.4	88.0		101.31	101.3	122.15	111.51	111.98	78.19	25.0
1983	238.1	169.8	76.5	78.48	97.83	97.8	125.86	115.91	75.60	60.58	27.0
1984	239.6	162.0	77.4	74.70	98.01	100.1	131.89	115.81	78.22	60.08	32.0
1985	228.6	162.0	71.4	74.13	90.76	91.3	145.93	113.59	67.50	59.50	28.0
1986	226.8	178.4	82.4	71.31	88.98	89.0	139.89	104.78	80.01	65.82	32.5
1987	238.4	188.4	82.7	85.26	103.84	97.2	150.41	126.51	80.96	63.11	26.5
1988	250.3	183.4	69.4	87.77	110.50	103.1	139.50	97.48	71.03	41.25	31.5
1989[2]	265.7	182.9	70.4	94.43	114.78	107.8	131.35	121.31	69.39	34.14	35.2
1990[4]	281.0	212.6	87.2	102.41	123.21		121.51	117.52	87.70	53.80	31.1

[1] Prior to 1983 prices are for cured pork cuts, picnics at N.Y. (4-8 lb). [2] Preliminary. [3] Sold as retail cuts (ham, bacon, loin, etc.). [4] Estimate. [5] Gross farm value minus by-product allowance. [6] Prior to 1988 prices are for pork, fresh loins (8—14 lbs.) N.Y. [7] Prior to 1987 prices are for choice steer beef carcass (600–700 lbs.). *Sources: Bureau of Labor Statistics; Department of Agriculture* T.404

Average Wholesale Price of Boxed Beef Cut-Out[1], Choice, at Central Markets In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1981	99.80	96.10	94.32	99.68	103.32	106.52	107.20	103.90	102.96	96.02	94.56	93.70	99.80
1982	97.40	101.20	103.80	109.50	115.10	111.20	102.60	100.80	95.50	93.00	92.90	92.62	101.30
1983	93.90	96.55	100.62	107.76	105.00	102.47	97.72	95.01	92.10	[illegible]	91.57	[illegible]	97.83
1984	105.74	102.86	105.14	103.50	99.62	98.54	101.26	97.61	94.37	[illegible]	99.08	101.22	100.11
1985	99.50	97.42	92.00	89.20	89.52	88.48	82.22	80.02	81.14	[illegible]	99.68	98.84	90.76
1986	92.26	86.82	85.04	83.34	86.42	83.58	89.25	90.98	90.50	91.80	95.70	92.04	88.98
1987	89.70	91.69	92.86	100.56	107.80	105.71	99.29	95.45	96.87	96.80	95.34	94.50	97.21
1988	97.15	99.50	103.47	105.25	111.70	106.38	97.09	101.04	103.15	104.36	104.75	106.20	103.34
1989[2]	107.30	107.98	112.43	113.84	112.62	106.35	113.17[2]	112.83	110.08	110.04	115.06[2]	119.52	—
1990	121.75	120.97	122.10	123.62	124.56	121.53	118.54	121.52	121.18	124.96	128.32	129.48	123.21

[1] 1–3; 550–700 lb. [2] Data prior to July 1989 are for steer beef carcass, 500–600 pounds at midwest markets. *Source: Economic Research Service, U.S.D.A.* T.405

Production[2] (Commercial Slaughter) of All Meats[1] in the U.S. In Millions of Pounds—Carcass Weight

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	3,417	3,014	3,389	3,299	3,071	3,118	3,041	3,044	3,247	3,433	3,185	3,417	38,675
1982	3,152	2,894	3,296	9,097			9,165			9,659			37,266
1983	3,151	2,787	3,269	3,051	3,163	3,299	3,002	3,440	3,435	3,523	3,472	3,383	38,974
1984	3,219	3,092	3,349	3,079	3,411	3,205	3,045	3,362	3,111	3,672	3,324	3,119	38,987
1985	3,421	2,938	3,162	3,295	3,488	3,085	3,277	3,402	3,252	3,544	3,123	3,145	39,131
1986	3,482	2,942	3,133	3,477	3,388	3,156	3,281	3,180	3,259	3,506	2,986	3,261	39,050
1987	3,411	2,875	3,197	3,160	2,975	3,103	3,158	3,135	3,331	3,521	3,197	3,378	38,442
1988	3,245	3,071	3,356	3,158	3,206	3,318	3,171	3,507	3,462	3,511	3,399	3,358	39,763
1989[3]	3,265	3,003	3,326	3,130	3,396	3,342	3,047	3,482	3,317	3,524	3,411	3,171	39,418
1990[3]	3,350	2,973	3,257	3,047	3,320	3,174	3,095	3,428	3,093	3,493	3,275		

[1] Except for pork production & lard. [2] Represents the total dressed carcass weight of livestock slaughtered under Federal inspection, exclusive of meats from condemned animals. [3] Preliminary. *Source: Agricultural Marketing Service, U.S.D.A.* T.406

Cold Storage Holdings of All[1] Meats in the United States, at End of Month In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981	790.3	782.9	775.9	817.2	795.2	716.6	628.6	538.9	508.6	546.8	552.2	578.2
1982	553.4	524.2	536.0	—	—	503.9	—	—	473.9	—	—	553.8
1983	573.4	571.0	576.3	607.6	619.2	595.5	569.8	543.3	535.3	576.7	667.6	679.3
1984	692.9	707.7	738.1	777.5	818.9	776.3	713.8	627.6	646.2	674.9	681.4	696.0
1985	735.0	702.9	721.2	772.7	784.9	758.6	738.2	677.1	654.2	645.2	633.0	607.4
1986	616.8	615.3	622.5	658.2	667.2	638.8	618.6	572.0	541.1	572.4	564.3	566.2
1987	597.6	599.0	598.2	590.8	560.2	498.7	515.6	495.9	523.0	575.6	613.8	622.9
1988	664.6	689.5	716.6	759.4	721.2	670.7	670.7	633.9	644.3	664.0	701.5	716.4
1989[2]	745.0	758.7	747.5	747.5	763.7	683.5	652.0	576.3	557.0	538.2	554.2	536.0
1990[2]	564.7	609.6	637.5	653.0	632.8	591.6	565.9	507.4	507.5	536.7	536.4	

[1] Includes beef and veal, mutton and lamb, pork and products, rendered pork fat, and miscellaneous meats. Excludes lard. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.407

Cold Storage Holdings of Frozen Beef[1] in the United States In Millions of Pounds

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1981	328.2	361.3	347.8	341.5	339.4	328.6	297.5	272.6	245.2	234.9	244.6	232.2
1982	256.7	249.1	223.3	211.9	—	—	189.7	—	—	247.7	—	—
1983	294.4	303.1	307.0	299.1	277.3	265.2	254.0	252.3	267.4	268.2	278.0	316.0
1984	325.0	338.0	332.5	325.7	324.6	312.8	303.2	301.7	290.0	319.6	326.0	340.1
1985	357.7	375.1	347.0	334.0	328.0	300.9	292.5	319.7	310.6	308.4	294.9	302.3
1986	317.4	318.4	302.3	297.1	301.2	318.5	321.6	337.0	319.4	291.6	292.3	297.5
1987	310.6	320.6	306.0	311.1	312.3	280.1	252.7	278.7	269.3	286.5	307.6	304.3
1988[2]	288.6	316.4	325.4	313.2	305.0	275.1	248.4	269.6	294.9	307.6	296.5	300.4
1989[2]	317.5	315.1	313.4	298.9	275.4	244.1	241.8	249.2	242.4	231.8	220.7	237.6
1990[2]	251.7	260.8	268.6	308.3	653.0	272.0	257.5	266.4	240.5	243.0	267.4	278.1

[1] Includes frozen beef, cured beef, and beef in process of cure. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.408

Mercury

Because of mercury's damaging environmental effects, world demand for mercury has been in a persistent slide. In 1990, the U.S. Environmental Protection Agency banned the use of mercury in interior latex paints, and limited amounts that could be added to exterior paints as a mildew inhibitor.

At the end of 1990, U.S. mercury production was exclusively a byproduct of nine gold mines in Nevada, California, and Utah. Placer Dome, owner of the McDermitt Mine in Nevada, which had been the only primary mercury mine in the U.S., closed because of weak market conditions. Mine production totals are not released by the U.S. Bureau of Mines. Domestic mine production in 1985, the last year for which data are available, was 570 tonnes. Since then, mine output is believed to have dipped, as consumption and prices have fallen.

Secondary mercury is obtained from industrial scrap, sales of surplus stocks by the U.S. Departments of Energy and Defense, and from imports. The latter dropped from 651 tonnes in 1985 to 131 in 1989.

Spain, the world's second-largest mercury producer (after the USSR), supplied almost all U.S. imports in 1989, whereas in previous years, China was a major supplier to the U.S.

The U.S., however, was a net exporter of mercury in 1989, shipping 221 tonnes to twenty-four countries. The Netherlands, South Africa and Germany were the chief destinations. U.S. mercury export data from 1979 to 1988 are not available. The Department of Energy sold 180 tonnes of surplus mercury in 1989 from inventory that is mainly held at Oak Ridge, Tennesee. As of December 31, 1989, the DOE still held 793 tonnes. The National Defense Stockpile also released 170 tonnes during 1989.

U.S. mercury consumption in 1989 totaled 1,214 tonnes, down from 1,593 in 1988, and was in the sixth year of decline, owing to lower mercury use in battery and chloralkali production. Battery use of mercury fell to only 250 tonnes in 1989 from 952 tonnes in 1985. Efforts were under way to find a mercury-free battery. Mercury is used in alkaline batteries to control corrosion, which causes leaks and reduces shelf life. However, it is toxic, and disposal in landfill sites is a growing problem.

Manufacture of chlorine and caustic soda is now the largest single consumption component, accounting for about a third of U.S. mercury use in both 1988 and 1989. Mercury's use in paint in the late 1980s held at about 195 tonnes.

World mercury production in 1989 totaled 5,840 tonnes, a shade lower than in 1988 and well under 7,247 tonnes in 1987. The USSR accounts for about a third of world output--2,300 tonnes--and Spain for around 1,380 tonnes. Algeria and China were the next largest producers.

Mercury contamination of the environment is a concern in many producing and consuming nations. In Brazil, where many of the smaller gold mines in the Amazon basin recovered gold by amalgamation with mercury, tighter controls have been imposed on how much mercury can seep into the basin.

World Mine Production of Mercury In Flasks of 34.5 Kilograms (76 lbs.)[1 tonne = 29.008216 flasks]

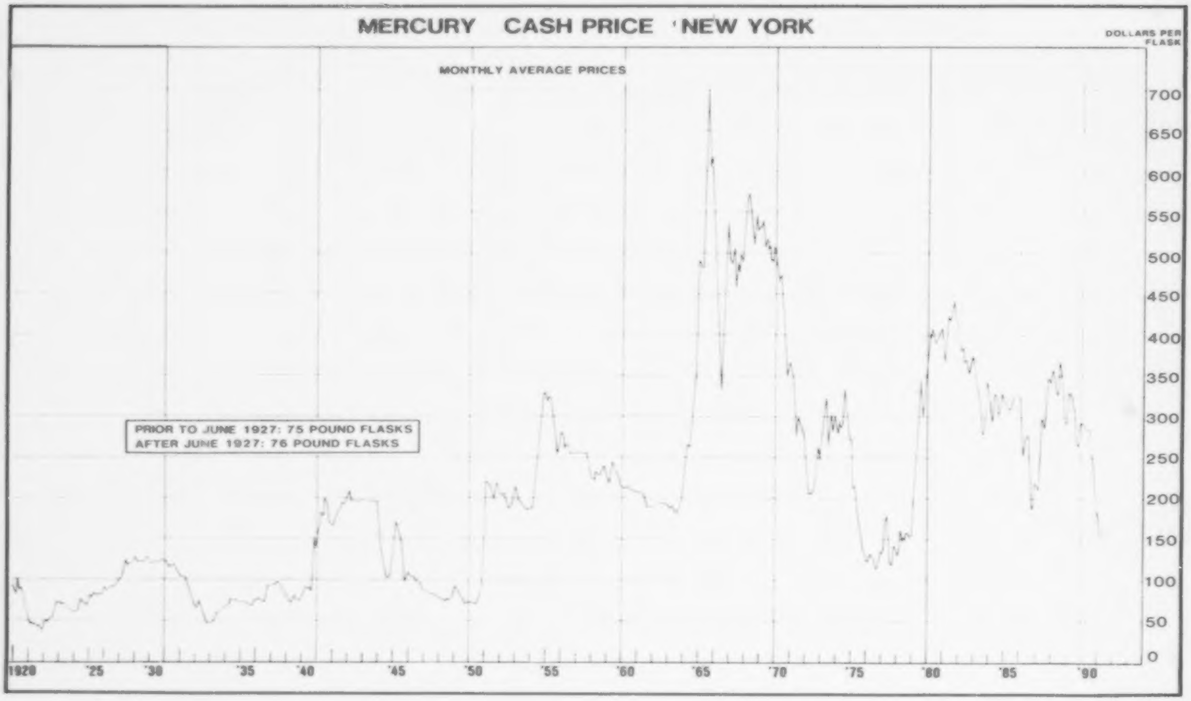
Year	Algeria	China[1]	Czechoslovakia	Dom. Rep.	Finland	Italy	Mexico	Spain	Turkey	United States	USSR[1]	W. Germany	Yugoslavia	World Total
1985	794	700	158	1	125	—	394	873	233	570	2,200	—	88	6,136
1986	756	700	168	—	146	—	104	2,757	291	N.A.	2,250	—	75	7,247
1987	705	700	164	—	144	—	124	1,395	211	N.A.	2,300	—	67	5,810
1988[2]	700	700	168	—	130	—	345	1,380	97	N.A.	2,300	—	70	5,890
1989[1]	700	700	165	—	125	—	300	1,380	100	N.A.	2,300	—	70	5,840
1990[1]	700						300	1,400	100		2,300			5,900

[1] Estimate. [2] Preliminary. *Source: Bureau of Mines* T.409

Salient Statistics of Mercury in the United States In Flasks (76 Pounds Each)

Year	Net Import Reliance as a % of Apparent Consumption	Production	Production — Secondary	Production — Secondary	N.D.S[4] Shipments (Primary)	Stocks, Dec. 31	Stocks, Dec. 31	Stocks, Dec. 31	Exports	U.S. Imports (For Consumption) From:						
		Mine	Industrial	D.O.E.[2] Shipments		Producers (Mine)	Consumers & Dealers	Total		Total	Algeria	Canada	Turkey	China	Spain	Japan
1985	57	570	185	20	156	669	296	965	N.A.	651						
1986	50	N.A.	219	106	16	N.A.	234	N.A.	N.A.	696						
1987	N.A.	N.A.	265	117	128	N.A.	320	N.A.	N.A.	636	—	5	—	406	172	34
1988[1]	N.A.	N.A.	278	214	52	N.A.	338	N.A.	N.A.	329	31	5	3	131	147	—
1989[3]		N.A.	137	180	170		231		221	131	—	—	—	—	127	—
1990[3]			140	170	—		230		220	130						

[1] Preliminary. [2] Dept. of Energy. [3] Estimate. [4] National Defense Stockpile. *Source: Bureau of Mines* T.412



Average Price of Mercury in New York In Dollars Per Flask of 76 Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1982	405.00	380.92	390.76	384.32	365.88	367.50	364.29	343.30	352.55	373.21	373.75	374.29	372.98
1983	366.67	346.18	338.91	327.62	316.31	300.23	282.25	279.02	299.05	339.29	344.50	331.69	322.64
1984	318.67	295.68	300.45	324.26	328.27	325.48	314.64	302.09	317.18	329.07	327.13	320.08	316.92
1985	317.30	315.00	314.38	309.34	297.27	309.05	316.74	324.61	325.00	325.00	325.00	325.00	316.98
1986	285.68	261.97	252.44	272.05	277.50	276.07	260.00	218.10	181.91	193.80	215.19	219.43	242.85
1987	216.70	211.03	223.73	260.00	297.63	297.73	286.82	306.55	337.86	345.91	348.95	342.27	289.60
1988	354.00	357.00	350.00	337.14	326.90	352.28	367.13	360.43	349.29	322.74	299.34	293.45	339.14
1989	292.50	318.42	330.00	327.50	315.68	308.86	293.03	273.80	265.13	267.61	282.50	292.50	297.29
1990	292.50	292.50	287.84	285.00	285.00	285.00	281.45	262.50	259.34	235.54	198.75	182.50	262.33
1991	181.55	169.08											

Source: American Metal Market T.410

Mercury Consumed in the United States In Metric Tons[3]

Year	Batteries	Chlorine & Caustic Soda	Catalysts Misc.	Dental Equip.	Electrical Lighting	General Lab. Use	Measuring Control Instrum.	Other Instruments + Relat.	Paints	Wiring Devices & Switches	Other Uses	Grand Total
1982	24,880	6,243	499	1,019	826	281	3,064	194	6,794	2,004	984	48,943
1983	23,350	8,054	484	1,597	1,273	280	2,465	N.A.	6,047	2,316	1,356	49,138
1984	29,700	7,347	359	1,432	1,487	269	2,856	N.A.	4,651	2,730	1,404	54,669
1985[3]	952	235	61	50	40	14	79	N.A.	169	95	20	1,718
1986	750	259	90	52	41	20	63	N.A.	179	103	31	1,588
1987	533	311	59	56	45	20	59	N.A.	198	131	34	1,446
1988	448	445	86	53	31	26	77	N.A.	197	176	55	1,593
1989[1]	250	381	40	39	31	18	87	N.A.	192	141	35	1,214
1990[2]												1,200

[1] Preliminary. [2] Estimate. [3] Data prior to 1985 are in flasks. *Source: Bureau of Mines* T.413

Milk

U.S. milk production began 1990 about 1 percent higher than in 1989 and by the third quarter was about 4 percent above the year-earlier level. Milk production in 1989 was 144 billion pounds, down 1 percent from 1988. During Jan.-Sept. 1990, milk production was over 112 billion pounds.

In the 21 producing states, milk output per cow during the first nine months of 1990 was 1,220 pounds per month, versus 1,173 in the same period of 1989 and 1,184 in 1988. Milk-feed price ratios were favorable, but there were only moderate increases in concentrate feeding. Without an increase in the amount of concentrates fed, milk yields were unlikely to stay above trend. Milk prices were weaker than expected, and the milk-feed price ratio was expected to deteriorate. This would mean less feeding and lower output per cow. Grain and oilseed crops were fairly large in 1990, but weak grain prices did not translate into lower dairy feed ingredient prices. Alfalfa hay prices were high, due to water problems in the western U.S., along with unfavorable growing conditions.

According to USDA, dairy farms were relatively sound financially in 1990, and producers could afford to expand operations. There was some herd rebuilding, though it was small. Over the first four months of 1990, the number of milk cows on farms averaged about half a percent below 1989. Over the Jan.-Sept. period, milk cows were running slightly above year-earlier levels, but the increase was not large, and producers remained conservative about new investments. In the 21 major states, the milk cow herd was about 8.52 million head, compared to 8.5 million in 1989 and 8.64 million in 1988.

Higher milk output in early 1991 was expected to lead to lower milk prices, which in turn should mean a deterioration in the milk-feed ratio. Over the first three quarters of 1990, the milk-feed ratio averaged 1.75, compared with 1.56 in the first three quarters of 1989. The USDA projected that the ratio could slip to the 1.3-1.5 range, which should mean less feeding of concentrates and lower milk output per cow.

Over the first two quarters of 1990, dairy producers marketed 74.5 billion pounds of milk, up from 73 billion in the same half of 1989. Total marketings in 1989 were 142.2 billion pounds. For 1990 as a whole, marketings were forecast to be 145.6 billion pounds. Virtually all milk is sold to plants and dealers, with only small amounts sold directly to consumers.

The milk price pattern in 1990 was practically the opposite of what was expected. Prices were on the defensive in late 1990. Overall, though, the average price of milk in 1990 was likely to approach, if not reach, a record of about $14.00 per hundredweight, 3 percent above 1989 and 14 percent above 1988.

World milk production was forecast to be 440 million tonnes, almost 2 percent more than in 1989. Increases were expected in India, New Zealand, and the Soviet Union, along with the U.S. Dairy product exports by the U.S. during May-July 1990 were 2 billion pounds on a milk-equivalent, milk-fat basis, almost twice as much as in the same 1989 period. The major increase was in butter.

Imports of dairy products during May-July were equivalent to 700 million pounds of milk on a milk-fat basis, up 40 percent from the year-earlier period. Imports of cheese rose, and over the first seven months of 1990 were up about 15 percent.

Under the provisions of the 1990 Farm Bill and the 1991 deficit reduction bill, the minimum support price for manufacturing grade milk was $10.10 per cwt.

World Fluid Milk Production (Cow's Milk) In Millions of Metric Tons

Year	Australia	Brazil	Canada	Czechoslovakia	Denmark	Finland	West Germany	USSR	India	Netherlands	New Zealand	France	Poland	Switzerland	United Kingdom	United States
1986	6.2	11.6	7.9	7.0	5.1	3.1	26.4	102.2	19.5	12.7	8.2	28.1	15.7	3.8	16.2	65.0
1987	6.4	13.3	8.0	6.9	4.9	2.9	24.4	103.4	21.2	11.8	7.2	27.1	15.5	3.8	15.4	64.7
1988	6.3	13.2	8.2	7.0	4.7	2.7	24.0	106.8	22.0	11.4	7.9	26.0	15.5	3.8	14.9	66.0
1989[1]	6.5	13.4	8.0	7.1	4.7	2.7	24.2	108.5	24.0	11.3	7.4	26.2	16.4	3.9	14.6	65.4
1990[2]	6.4	14.2	7.9	7.1	4.7	2.7	23.6	109.0	26.7	11.2	7.8	26.4	16.2	3.9	14.8	67.3

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.414

U.S. Milk-Feed Price Ratio[1] In Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	1.48	1.50	1.48	1.48	1.46	1.45	1.51	1.55	1.61	1.75	1.77	1.77	1.57
1987	1.73	1.69	1.63	1.61	1.57	1.57	1.56	1.58	1.64	1.65	1.65	1.63	1.63
1988	1.51	1.47	1.43	1.40	1.37	1.36	1.15	1.19	1.28	1.32	1.36	1.38	1.34
1989	1.38	1.35	1.30	1.29	1.27	1.29	1.37	1.43	1.52	1.63	1.71	1.76	1.44
1990[2]	1.69	1.55	1.47	1.48	1.49	1.52	1.56	1.58	1.57	1.46	1.41		

[1] Pounds of 16% protein mixed dairyfeed equal in value to one pound of milk. [2] Preliminary. *Source: National Agricultural Service, U.S.D.A.*
T.420

Milk Cows & Cattle and Milk Production in the U.S.

Year	Number of Milk Cows on Farms[2] (Thousands)	Production Per Milk Cow[3]		Total Milk Production[3]			Milk Sold to Plants & Dealers		Milk Sold Directly to Consumers		Milk Utilized Bill. Lbs.	Farm Value of All Milk Produced Mill. $	Exports Mill. Lbs.	Imports Mill Lbs.	Per Capita Consump. Fluid Milk In Lbs.
		Milk Pounds	Milk Fat Pounds	Quantity Billion Pounds	% of Fat in All Milk Produced	Milk Fat Mil. Lbs.	Quantity Billion Pounds	$ Per 100 Lbs.	Quantity Million Quarts	¢ Per Quart					
1984	10,793	12,541	458	135.4	3.66	4,964	131.4	13.46	530.8	49.2	132.5	18,341	3,600	2,741	237
1985	10,981	13,024	476	143.0	3.67	5,249	139.4	12.75	583.9	48.7	140.7	18,379	4,805	2,776	240
1986	10,773	13,285	486	143.1	3.67	5,258	139.8	12.51	547.1	48.3	141.0	18,058	1,970	2,732	240
1987	10,327	13,819	504	142.7	3.65	5,208	139.1	12.54	559.2	48.7	140.3	17,997	2,434	2,490	237
1988[1]	10,262	14,145	522	145.2	3.67	5,347	142.1	12.24	545.7	50.0	143.3	17,947	1,533	2,394	233
1989[4]	10,127	14,244		144.3									3,496	2,498	230
1990[4]	10,144	14,646		148.6										2,600	

[1] Preliminary. [2] Average number on farms during year excluding heifers not yet fresh. [3] Excludes milk sucked by calves & milk produced by cows not on farms. [4] Estimate. *Source: Crop Reporting Board, U.S.D.A.* T.415

Utilization of Milk in the United States In Millions of Pounds (Milk Equivalent)

Year	Butter from Whey Cream	Creamery Butter[1]	Cheese[6]	Cottage Cheese (Creamed)	Condensed Whole Milk	Evaporated Milk[5]	Dry Whole Milk Products	Ice Cream & Other	Frozen Dairy Products[2]	Fluid Consumption		Fed to Calves	Other Mfg. Products[4]
										Nonfarm	Farm[5]		
1984	3,406	21,471	38,718	932	724	1,419	880	14,783	12,660	50,605	804	2,129	488
1985	3,694	24,385	41,700	917	817	1,509	877	15,021	12,855	52,014	709	1,745	477
1986	3,799	23,274	42,239	914	835	1,278	901	15,451	13,226	52,636	677	1,714	559
1987	3,894	21,072	42,851	884	891	1,272	1,067	15,697	13,456	53,434	656	1,599	452
1988[3]	4,017	23,099	44,111	857	812	1,285	1,263	15,115	12,960	54,450	621	1,620	388

[1] Excludes whey butter. [2] From milk and cream only. [3] Preliminary. [4] Includes dry cream, malted milk, dry part skim milk, dry ice cream mix. [5] Used for farm-churned butter. [6] American & other. *Source: Crop Reporting Board, U.S.D.A.* T.416

Milk Production on Farms in the United States In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	11,373	10,856	11,713	11,660	12,219	11,710	11,487	11,205	10,784	10,913	10,524	11,006	135,450
1985	11,276	10,485	11,874	12,028	12,869	12,506	12,553	12,342	11,790	11,986	11,520	11,918	143,147
1986	12,211	11,276	12,565	12,517	13,127	12,509	12,272	11,899	11,288	11,360	10,963	11,393	143,381
1987	11,668	10,896	12,257	12,222	12,897	12,328	12,227	11,920	11,432	11,704	11,298	11,860	142,709
1988	11,998	11,550	12,582	12,426	12,974	12,440	12,321	11,985	11,614	11,811	11,436	12,015	145,152
1989[1]	12,298	11,411	12,736	12,582	12,972	12,148	11,974	11,846	11,368	11,661	11,396	11,860	144,252
1990[1]	12,372	11,585	12,983	12,777	13,229	12,605	12,580	12,325	11,784	12,109	11,850	12,355	148,555

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.417

Average Price Received by U.S. Farmers for All Milk[2] (Sold to Plants) In Dollars Per Cwt.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average[1]
1984	13.60	13.40	13.30	13.10	13.00	12.90	13.00	13.20	13.60	14.00	14.30	14.00	13.46
1985	13.90	13.70	13.30	12.90	12.50	12.20	12.10	12.10	12.30	12.60	12.60	12.60	12.75
1986	12.50	12.40	12.20	12.10	12.00	11.90	12.00	12.30	12.80	13.20	13.40	13.40	12.51
1987	13.20	12.90	12.50	12.20	11.90	11.90	12.00	12.20	12.60	12.90	12.90	12.70	12.54
1988[3]	12.50	12.20	11.90	11.60	11.40	11.30	11.40	11.80	12.50	13.00	13.40	13.60	12.26
1989[3]	13.50	13.20	12.70	12.40	12.30	12.40	12.60	13.20	14.00	14.80	15.60	16.00	13.56
1990[3]	15.70	14.40	13.70	13.40	13.50	13.80	14.10	14.30	14.20	13.20	12.80	12.20	13.78

[1] Weighted average. [2] Adjusted for seasonal variation. [3] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.418

Farm Price of Milk[1] Eligible for Fluid Market In Dollars Per Hundred Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	13.80	13.50	13.40	13.20	13.10	13.00	13.10	13.30	13.80	14.20	14.40	14.10	13.61
1985	14.10	13.90	13.50	13.00	12.70	12.30	12.30	12.30	12.40	12.70	12.70	12.70	12.90
1986	12.70	12.60	12.40	12.20	12.10	12.00	12.10	12.40	12.90	13.30	13.50	13.50	12.62
1987	13.30	13.00	12.70	12.40	12.10	12.00	12.20	12.40	12.80	13.00	13.00	12.80	12.66
1988	12.70	12.40	12.10	11.70	11.50	11.40	11.50	12.00	12.60	13.10	13.50	13.70	12.36
1989	13.60	13.40	12.90	12.50	12.40	12.50	12.70	13.30	14.10	14.90	15.60	16.10	13.66
1990[2]				13.40	13.60	13.90	14.20	14.30	14.30	13.30	12.90		

[1] MILK, Standard Grade, 3.5% milkfat. Weighted average price per 100 pounds (f.o.b. city). [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.419

Molasses

Domestic production of beet molasses is about one million tonnes a year, while output of cane molasses is around 950 million tonnes. Beet molasses is used primarily as a livestock feed and as a yeast by the pharmaceutical industry. The price of beet molasses in North Dakota during the first half of 1990 was about $55 per short ton, unchanged from the 1989 level. Prices had fallen from the recent peak of $68.44 in 1986. The price of molasses beet pulp in Los Angeles was around $118 a ton in first-half 1990, down from about $128 a year earlier.

The last year for which molasses supply/demand numbers were available was 1989. U.S. beet molasses production in 1989 was estimated at 966,000 tonnes, down from 1.006 million the year before. Output of mainland cane molasses increased to 808,000 tonnes from 766,000 in 1988, while shipments of Hawaiian cane molasses to the mainland fell to 169,000 tonnes from 178,000 in 1988. Production of refiners' blackstrap molasses was 123,000 tonnes, above 1988's output of 101,000 tonnes.

U.S. imports of molasses fell to 930,000 tonnes in 1989 from 987,000 the previous year. Exports of molasses dropped to 214,000 tonnes from 299,000 in 1988.

World Production of Molasses (Industrial) In Thousands of Metric Tons

Crop Year	Argentina	Brazil	Cuba[2]	France	W. Germany	India	Italy	Mexico	Philippines	Poland	Australia	Thailand	China	United States	USSR	World Total
1978–9	818	5,000	1,296	952	685	2,564	365	1,410	818	657	577			2,148	3,306	32,688
1979–0	789	4,800	1,185	958	653	1,582	390	1,260	818	653	598			2,054	3,062	30,052
1980–1	654	5,400	1,111	1,013	657	2,129	410	1,145	860	430	713			2,012	2,669	30,941
1981–2	565	4,520	1,200	1,404	836	3,400	500	1,373	941	665	719	1,736		2,051	2,385	34,384
1982–3	541	5,110	1,050	1,364	807	3,700	370	1,270	957	758	726	1,316		1,900	2,530	35,139
1983–4	560	5,130	1,150	1,072	605	2,500	380	1,390	928	816	718	1,230	1,275	2,015	2,723	32,981
1984–5	702	4,800	1,150	1,165	640	2,500	380	1,400	744	708	736	1,356	1,130	2,012	3,200	33,755
1985–6	854	3,986	2,000	1,126	751	2,850	486	1,608	551	636	658	1,194	1,909	1,848	2,900	33,852
1986–7	950	2,587	1,750	998	715	3,660	530	1,552	490	638	693	1,206	1,875	2,027	2,950	33,429
1987–8[1]	880	4,000	1,750	1,050	600	3,800	539	1,560	490	635	730	1,215	1,870	2,056	2,850	34,866
1988–9[3]	850	4,000	1,750	1,000	600	3,500	490	1,560	490	635	740	1,275	1,875	2,010	2,950	34,717

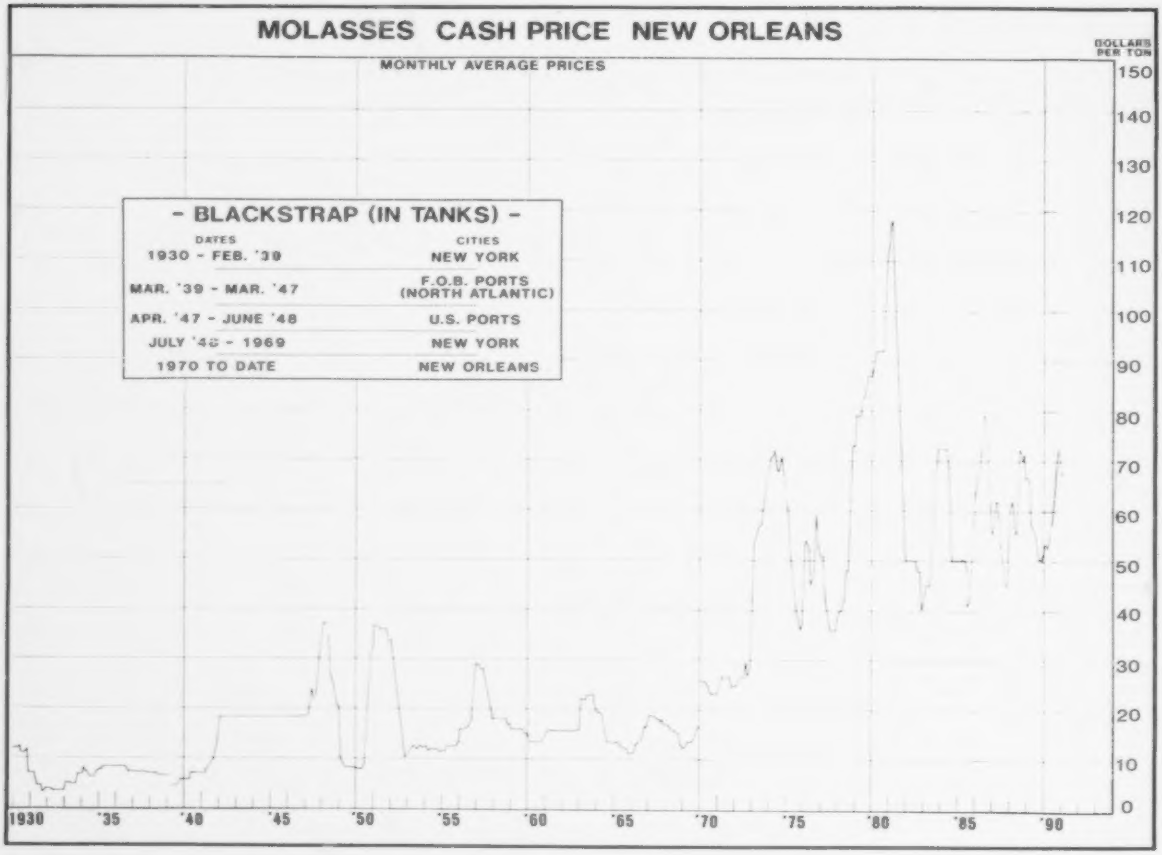
[1] Preliminary. [2] Includes hi-test molasses. [3] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.421

U.S. Annual Average Prices of Molasses, by Types (F.O.B. Tank Car or Truck) In Dollars Per Short Ton[1]

	Blackstrap						Beet Molasses			Citrus Molasses
Year	New Orleans	South Florida	Baltimore	Minneapolis	Omaha	Calif. Ports	Colorado	Wyo. & Montana	No. Dak. & Minn.	Florida
1977	40.55	42.45	47.00	54.35	58.75	42.90	41.45	45.20	55.10	50.65
1978	51.50	52.40	59.25	67.30	72.55	54.00	60.40	58.35	60.95	61.05
1979	82.95	85.50	91.20	107.90	107.75	84.05	85.30	82.65	N.A.	79.40
1980	96.50	96.80	106.75	124.45	128.85	101.70	95.60	96.55	N.A.	103.65
1981	84.90	90.00	99.30	111.20	119.40	89.20	85.30	95.20	N.A.	103.10
1982	48.00	56.55	64.15	70.85	81.90	60.50	69.40	63.70	44.50	86.90
1983	56.50	63.10	73.05	76.90	91.90	70.40	79.45	65.95	60.55	89.20
1984	61.50	71.00	77.65	81.00	94.45	71.95	82.50	79.15	70.65	97.50
1985	50.28	59.79	64.66	72.83	85.00	61.89	N.A.	67.50	57.33	N.A.
1986	69.61	78.10	83.05	92.03	N.A.	73.26	80.33	86.75	68.44	N.A.
1987	53.23	61.96	72.83	80.05	N.A.	67.17	60.31	54.69	62.22	N.A.
1988	64.89	74.54	82.93	90.07	N.A.	74.61	72.95	69.94	55.71	N.A.
1989[2]	55.63	65.31	75.15	81.12	N.A.	70.36	79.94	74.50	55.00	N.A.
Jan. '90	52.75	60.00	75.00	80.10		69.00	80.00	75.00	55.00	
Feb.	53.13	60.00	73.75	80.50		70.00			55.00	
Mar.	52.50	60.00	70.00	80.50		70.00			55.00	
Apr.	54.25	60.50	70.00	80.70		70.00			55.00	

[1] Per ton prices are based on 171 gallons for blackstrap, beet and corn molasses and on 175 gallons for citrus molasses. Prices represent sales F.O.B. terminal to the general feed trade and do not include sales made under various pricing arrangements above or below prices generally available to the ultimate user. Ton—2,000 lbs. Gallon—U.S. gallon. Prices are now rounded off to the nearest 5 cents. [2] Preliminary. *Source: Molasses Market News, Annual Summary, AMS, U.S.D.A. Denver Colorado, and Molasses Market News, Weekly, various issues* T.423

MOLASSES



Salient Statistics of Molasses in the United States In Thousands of Metric Tons

Year	Mainland cane	Domestic beet	Refiners blackstrap	Total[2]	In shipments from Hawaii	Imports Edible & Inedible	Imports from Brazil	Imports from Domin. Repub.	Imports from Mexico	Exports	Total U.S. supply
1984	633	908	184	1,759	266	1,370	54	155	94	140	3,255
1985	697	879	136	1,712	236	1,644	203	99	161	196	3,396
1986	731	1,025	127	1,884	274	123	309	137	97	330	3,058
1987	726	1,137	111	1,975	152	962	95	124	184	367	2,722
1988	766	1,006	101	1,807	178	987	143	103	94	299	2,673
1989[1]	808	966	123	1,900	169	930				214	

[1] Preliminary. [2] Starting 1984 totals are adjusted to reflect omission of citrus and hydrol production. *Source: Molasses Market News, AMS, USDA.*

Wholesale Price of Blackstrap Molasses (Cane) at New Orleans In Dollars Per Ton

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	72.50	72.50	72.50	72.50	70.70	68.75	59.00	50.00	50.00	50.00	50.00	50.10	61.55
1985	50.00	50.00	50.00	50.00	50.00	47.75	41.00	41.90	48.00	53.75	57.50	63.50	50.28
1986	65.00	65.60	68.50	71.00	73.75	79.00	79.13	76.60	72.30	68.10	60.25	55.50	69.56
1987	56.25	59.40	62.00	59.40	59.10	53.00	50.60	48.60	45.30	45.00	47.00	53.10	53.23
1988	60.30	62.00	60.60	56.90	55.50	62.50	72.50	72.50	70.00	71.50	67.50	66.90	64.89
1989	66.90	66.25	57.50	56.90	55.75	55.60	55.00	51.25	50.00	50.50	50.00	51.25	55.58
1990	52.75	53.10	52.50	54.25	57.20	57.50	62.75	68.75	70.60	72.25	71.25	67.50	61.70
1991	67.50												

Source: Economics Service, U.S.D.A.

T.424

Molybdenum

Domestic molybdenum production comes largely as a byproduct of copper mining, and only 40 percent of supply is from primary sources.

For the first eight months of 1990, U.S. molybdenum concentrate production was 40,545 tonnes, compared with total 1989 output of 63,094. During the same 1990 period, domestic molybdenum shipments were 25,721 tonnes, versus full-year 1989's 46,392.

Gross output of molybdenum products in the first eight months totaled 18,732 tonnes, versus full-year 1989's 27,985 tonnes. Shipments of molybdenum products during January to August were 12,214 tonnes, compared with 18,277 in all of 1989.

The U.S. is a net exporter of molybdenum and ships ore and concentrate to 22 nations. For the first nine months of 1990, molybdenum exports were 31.4 million kilograms, compared with all of 1989's 51.2 million. The chief customer was the UK, which imported 8.1 million kg. in the first nine months, near 1989's full-year pace of 12 million kg. Belgium-Luxembourg was next, taking 7.4 million kg. in the first three quarters of 1990. In 1989, the Netherlands was the leading customer with 20.9 million kg., but was lagging that pace in 1990.

While basically self-sufficient in molybdenum, the U.S. engages in a small import trade. In the first seven months of 1990, the U.S. imported 1.3 million kg. of contained molybdenum products. That compared with 1989's import total of 1.6 million kg. Ferromolybdenum, a specialty steel, accounts for the bulk of the imports.

In August of 1990, the U.S. monthly average price for molybdenum concentrate was $5.667 a kilogram, or $2.570 a pound. The average price for dealer molybdenum oxide was $6.196 a kilogram, or $2.810 a pound. Prices started the year at $5.126 for concentrate and $5.773 for molybdenum oxide. Ferromolybdenum prices were basically unchanged at $3.92 a pound.

In February 1990, due to the close balance of supply and demand, Cyprus Minerals Co. confirmed that almost all of 1990's production was fully committed to customers.

World molybdenum output was about 189,000 tonnes, with major production coming from the U.S., Chile and Canada, all copper producers.

World Mine Production of Molybdenum In 1,000 Pounds (Contained Molybdenum)

Year	Bulgaria	Canada[3]	Chile	China	Iran	Mexico	Mongolia	Niger	Peru	Philippines	South Korea	United States	USSR	World Total
1981	330	28,329	33,863	4,400		994	1,460	249	5,485	207	1,023	139,900	23,600	240,003
1982	375	30,779	44,198	4,400		11,442	1,830	93	6,427	150	796	84,381	24,300	209,385
1983	420	22,474	33,651	4,400		12,932	2,120	88	5,825	86	313	33,593	24,500	140,616
1984	420	25,479	37,172	4,400	1,100	8,938	2,200	73	6,557	—	348	103,664	24,700	214,275
1985	420	17,311	40,541	4,400	1,100	8,292	2,200	44	8,393	—	734	108,409	24,900	216,959
1986	420	24,804	36,555	4,400	1,100	7,386	2,425	44	7,681	—	697	93,976	25,100	203,588
1987	440	32,564	37,349	4,400	1,100	9,700	2,425	18	7,392	—	717	75,117	25,300	196,522
1988[1]	440	29,840	34,231	4,400	1,100	9,824	2,425	33	5,388	—	317	94,911	25,300	208,209
1989[2]	420	30,102	36,500	4,400	1,100	9,900	2,650	33	6,800	—	330	139,123	25,300	256,658
1990[2]	405	28,300	34,400	2,000	1,000	10,100			6,100			122,000	23,300	230,600

[1] Preliminary. [2] Estimate. [3] Shipments. *Source: Bureau of Mines* T.425

U.S. Salient Statistics of Molybdenum In 1,000 Pounds (Contained Molybdenum)

	Concentrate							Primary Products[3]							
		Shipments						Net Production				Shipments			
Year	Production	Total (Includes Exports)	Value Mill. $	For Exports	Consumption	Imports for Consumption	Stocks Dec. 31[2]	Grand Total	Molybdic Oxide[4]	Molybdenum Metal Powder	Price Avg Value $ Kilogram	To Domestic Destinations	Oxide For Exports	Consumption	Producers' Stocks Dec. 31
1980	150,686	149,311	1,344	35,026	108,206	1,825	18,101	106,284	84,554	4,904		95,391	35,557	53,265	27,007
1981	139,900	118,916	945.5	32,735	80,725	1,988	35,043	105,824	59,645	3,513		64,368	20,004	50,189	44,961
1982	84,381	76,135	504.1	21,870	49,444	3,115	38,510	65,381	35,354	3,304		47,884	23,375	27,665	49,402
1983	33,593	48,805	166.6	18,979	27,014	1,673	11,637	37,533	11,148	3,667		50,562	19,877	27,225	28,352
1984	103,664	102,405	326.8	41,687	54,843	28	12,450	79,689	40,186	4,302		65,527	24,553	34,792	22,155
1985	108,409	111,936	347.8	38,646	N.A.	112	9,322	87,436	48,750	3,734		73,861	36,268	33,451	21,014
1986	93,976	95,006	240.5	18,267	53,061	1,120	8,715	41,490	6,147	4,256	6.44	57,855	21,325	31,898	20,699
1987	75,117	69,868	179.3	18,587	37,442	1,264	15,082	34,659	N.A.	4,181	7.28	40,668	12,273	32,629	22,168
1988[1]	94,911	99,738	266.9	26,294	78,684	169	10,433	56,540	6,214	4,378	7.61	45,273		38,408	15,688
1989[5]	139,123	136,097	421.4		92,324	—	12,931	61,696	4,486	N.A.	8.05	40,293		38,064	14,716
1990[5]	122,000				103,200		13,000				7.79				

[1] Preliminary. [2] At mines & at plants making molybdenum products. [3] Comprises ferromolybdenum, molybdic oxide, & molybdenum salts & metal. [4] Includes molybdic oxide briquets, molybdic acid, & molybdenum trioxide. [5] Estimate. *Source: Bureau of Mines* T.426

Nickel

Nickel continued the dramatic slide begun in 1989, as prices fell quickly from a record high of just over $8.00 a pound on the London Metals Exchange (LME) in mid-1989 to slightly under $4.00 a pound in late 1990. Continued slack demand and inventory buildups by late 1990 led to industry talk of mine and smelter closures.

The nickel market was influenced by some of the greater issues of the day, notably Soviet perastroika, the environment, and the Iraqi invasion of Kuwait and the ensuing oil crisis.

The USSR is a major nickel producer, and the state had controlled the sale of nickel into world channels. Most of the nickel came from the Norilsk Combine, the nation's premier nickel-producing group. In September 1990, with the advent of perastroika and the weakening of the government-trading companies, Norilsk severed all ties to Raznoimport, the state metals sales agency, and began marketing nickel on its own. Norilsk now controls the sale of 90 percent of Soviet nickel and is now a recognized name for tenderable nickel on the LME.

Soviet nickel imports into the U.S. were suspended from 1983 until June 28, 1990, when the U.S. and the USSR signed an agreement to resume the trade. The agreement, however, stated that imports of nickel must be certified by Raznoimport to contain no Cuban metal and must originate in Norilsk or Monchegorsk, USSR.

The primary environmental concern associated with nickel is that the smelting process is a major cause of acid rain. Inco, which operates a major smelter in Sudbury, Ontario, is now required by Canadian law to reduce the emissions of that plant by two-thirds to 290,000 tons a year by 1994. The company embarked on a $410 million program to install new emissions reduction technology.

Nickel prices reacted to the increase in oil prices in 1990. On the LME, prices quickly rose by about 50 cents a pound after the August 2, 1990 Iraqi invasion of Kuwait. Most ferronickel production is heavily energy-intensive and dependent on oil.

Nickel has not been mined in the U.S. since 1986, when output was 1,175 short tons out of global production of 869,293 tons. In 1990, global nickel output totaled 1.046 million tons. The largest producer of nickel was the USSR with 237,000 tons, followed by Canada with 225,000, and New Caledonia with 140,000.

U.S. imports of nickel in 1990 totaled 160,000 tons, somewhat above 1989's 139,039. Nickel cathodes, pellets and briquets were the chief import items. Canada is the major source of nickel supply for the U.S., followed by Norway.

Futures Market

Nickel futures are traded on the London Metal Exchange.

World Mine Production of Nickel In Thousands of Short Tons of Contained Nickel

Year	Australia[3]	Botswana	Brazil	Canada	Cuba	Domin. Repub.	Finland[3]	Greece	Indonesia	New Caledonia	Philippines	South Africa	United States	USSR	Zimbabwe	World Trade
1984	84.8	20.5	25.9	192.0	35.1	26.4	7.6	18.4	52.5	64.3	15.0	27.6	14.5	192.0	13.4	846.9
1985	94.5	29.0	18.2	187.4	35.4	28.0	9.4	24.3	44.5	79.8	31.0	27.6	6.1	204.0	12.3	895.7
1986	84.6	28.2	23.3	180.4	35.5	24.1	13.1	15.9	59.2	68.1	14.1	34.2	1.2	215.0	4.1	869.3
1987	82.2	28.6	22.2	208.4	37.3	35.8	11.6	10.1	63.7	62.7	8.6	37.8	—	226.0	6.9	910.0
1988[1]	68.7	28.6	23.0	240.9	46.0	32.3	12.9	9.9	63.9	74.6	11.9	38.4	—	237.0	8.3	961.3
1989[2]	73.9	28.7	23.1	224.4	47.4	35.3	13.2	9.9	70.9	137.8	15.4	39.1	—	237.0	8.8	1,027.3
1990[2]	75.0	29.0	24.0	225.0	46.0	36.0	13.0	10.0	80.0	140.0	16.0	40.0	—	237.0	9.0	1,046.0

[1] Preliminary. [2] Estimate. [3] Content of nickel sulfate and concentrates. *Source: Bureau of Mines* T.427

Salient Statistics of Nickel in the United States in Short Tons

Year	Net Import Reliance as a % of Apparent Consumption	Production		Nickel Consumed[1], By Uses (contained nickel)								Consumption (Apparent)	Stocks, Dec. 31		Nickel & Pdt's (nickel content)		Avg. N.Y. Cathode Price Free Mkt. $ Lb.
		Plant[4]	Secondary[3]	Alloy Steels	Cast Irons	Copper Base Alloys	Electroplating Anodes	Nickel Alloys	Stainless & Heat Resisting Steels	Super Alloys	Chemicals		At Consumers' Plants	At Producer Plants	Imports	Exports	
1983	75	33,400	49,852	9.8	1.1	6.3	22.6	24.9	47.0	11.5	2.0	201,000	20,448	38,500	152,333	43,913	2.20
1984	69	44,933	55,167	11.9	1.5	6.7	24.8	29.4	45.8	12.9	2.2	210,600	20,934	37,300	176,715	43,904	2.22
1985	71	36,382	53,645	9.6	3.1	14.9	24.9	25.3	68.0	13.6	2.1	196,995	19,106	17,400	157,690	35,245	2.26
1986	73	1,651	43,726	8.2	2.6	10.6	21.0	19.9	60.2	12.7	1.9	170,534	16,557	10,300	129,094	15,217	1.86
1987	81	—	35,639	9.0	1.8	11.2	22.7	19.2	79.1	18.3	1.9	184,250	10,478	6,824	154,095	15,333	2.28
1988[2]	74	—	45,237	8.1	2.6	7.6	21.5	21.0	88.3	14.9	2.0	175,436	12,110	7,672	154,366	20,972	6.25
1989[5]	73	382	43,855	6.7	2.6	10.9	23.8	20.7	75.9	12.1	1.3	162,102	9,749	6,819	139,039	24,173	6.05
1990[5]	83	4,000										170,000	12,000	9,000	160,000	24,000	4.00

[1] Exclusive of scrap. [2] Preliminary. [3] From purchased scrap (ferrous & nonferrous). [4] Smelter & refinery. [5] Estimate. *Source: Bureau of Mines* T.428

Oats

U.S. oats production in 1990 declined by 4 percent to an estimated 358 million bushels. Output had expanded in 1989, following the previous year's drought. Oats are grown primarily in the north-central Plains states of South Dakota, North Dakota, Minnesota and Wisconsin. Timely rains in the 1990 season resulted in a national average yield of just over 60 bushels per acre, compared with 54 bushels in 1989. Average yield rose by 16 bushels in South Dakota and by 20 bushels in North Dakota.

Acreage seeded to oats continued to decline, as farm animal numbers have fallen. Plantings in 1990 were only 10.4 million acres, 14 percent less than the previous season. The USDA responded to the downtrend in production by holding the acreage reduction requirement for oats at 5 percent in 1990, compared to 10 percent for other feed grains like barley. Still, participation by oats growers in the government program has declined.

Harvested acreage was close to 6 million or 13 percent less than in 1989. While producers had shown some interest in expanding oats output and had been encouraged by USDA to do so, the trend appears to be reverting back to lower production.

Carry-in stocks at the beginning of the 1990/91 season were 157 million bushels, well above 98 million a year earlier. Because of strong consumer demand and small domestic production, oats have been imported from Canada, Sweden, and Argentina in recent years. For 1990/91, imports were expected to total 60 million bushels, down from 72 million the year before. Total domestic supplies of oats expanded to 568 million bushels from 545 million.

With lower oats prices in 1990/91, feed use was expected to increase by 22 percent to 330 million bushels. Oats used for food, seed and industrial purposes were likely to total 120 million bushels, compared to 115 million the previous year. Research studies raised some questions about whether oat bran confers as many health benefits as advertised, and the rate of increase in food use of oats slowed. Competition on the basis of health benefits from grains like rice also cut into oat use. Projected U.S. ending stocks of oats in 1990/91 were 125 million bushels, down by 20 percent.

U.S. Government Program

The 1990 Farm Bill made a number of changes in the feed grain program. The 1991 oats target price was unchanged at $1.45/bu., while the loan rate in 1991 was set at 83 cents/bu., up from 81 cents in 1990. There was to be no set-aside for oats in 1991.

Futures Market

Oats futures and options are traded on the Chicago Board of Trade.

World Production of Oats In Thousands of Metric Tons

Crop Year	Argentina	Australia	Canada	China	Denmark	France	Netherlands	Poland	Spain	Sweden	Turkey	United States	USSR	Un. King.	West Germany	World Total
1978–9	676	1,763	3,621	1,500	206	2,203	140	2,492	553	1,550	370	8,730	18,507	706	4,049	51,753
1979–0	522	1,411	2,978	1,600	163	1,845	109	2,186	456	1,524	370	7,643	15,200	542	3,697	45,165
1980–1	433	1,128	3,028	1,800	160	1,927	94	2,245	680	1,567	355	6,652	15,544	601	3,249	44,543
1981–2	339	1,617	3,188	1,700	176	1,774	115	2,731	445	1,816	325	7,391	15,000	620	3,200	45,343
1982–3	637	848	3,637	1,660	178	1,802	136	2,608	443	1,663	330	8,602	15,500	575	3,777	47,866
1983–4	593	2,296	2,773	1,650	86	1,374	61	2,377	464	1,268	310	6,923	17,000	465	2,489	45,115
1984–5	610	1,367	2,670	780	150	1,892	58	2,604	780	1,904	300	6,875	19,200	516	2,973	48,391
1985–6	400	1,339	2,997	664	152	1,803	58	2,682	719	1,668	314	7,559	20,500	615	3,278	50,062
1986–7	400	1,600	3,300	700	111	1,000	40	2,500	422	1,500	300	5,582	21,900	505	2,700	47,500
1987–8	700	1,700	3,000	600	93	1,000	47	2,400	502	1,400	310	5,429	18,500	440	2,400	43,700
1988–9[1]	500	1,900	3,000	700	130	1,000	27	2,200	580	1,300	300	3,177	15,300	685	2,400	37,500
1989–90[2]	600	1,600	3,500	600		1,000		2,200		1,500		5,423	16,800		1,900	41,700
1990–1[2]	600	1,700	3,500	700		900		2,100		1,600		5,201	17,500		2,100	42,900

[1] Preliminary. [2] Estimated. *Source: Foreign Agricultural Service, U.S.D.A.* T.434

United States Official Oat Crop Production Reports In Thousands of Bushels

Year	July 1	Aug. 1	Sept. 1	Oct. 1	Dec.	Final	Year	July 1	Aug. 1	Sept. 1	Oct. 1	Dec.	Final
1982	580,288	591,478	599,008	—	616,981	592,630	1987	—	392,843	—	—	—	373,713
1983	519,002	504,201	472,541	—	477,303	476,471	1988	—	206,330	206,330	210,766	—	217,600
1984	454,747	455,190	472,460	—	471,921	473,661	1989	387,593	380,690	380,690	370,693	—	373,587
1985	498,953	519,028	537,443	—	518,626	518,490	1990	374,457	365,337	365,337	358,288	—	
1986	—	443,183	413,025	—	383,553	384,996	1991						

Source: Crop Reporting Board, U.S.D.A. T.431

OATS

Oats Stocks in the United States as of June 1 In Thousands of Bushels

Year	On Farms	Off Farms	Total All Positions	Year	On Farms	Off Farms	Total All Positions
1987	103,300	29,446	132,746	1989	59,930	38,404	98,334
1988	76,900	35,129	112,029	1990[1]	82,850	74,062	156,912

[1] Preliminary. *Source: Agricultural Statistics Board, U.S.D.A.*

Production of Oats in the United States, by States In Millions of Bushels

Year	Illinois	Indiana	Iowa	Michigan	Minnesota	Missouri	Nebraska	New York	No. Dakota	Ohio	Oregon	Pennsylvania	So. Dakota	Texas	Wisconsin	California
1979	15.6	6.4	63.0	18.9	84.9	2.0	21.2	18.0	37.0	20.3	4.0	18.4	94.4	16.8	55.9	4.1
1980	14.0	5.9	62.0	20.1	82.7	2.0	15.6	17.9	13.5	19.4	4.1	19.0	66.0	12.6	58.7	4.3
1981	13.5	5.5	59.5	21.1	90.1	4.6	15.8	17.9	44.2	17.0	4.6	20.0	70.5	18.9	52.6	3.6
1982	11.8	6.7	54.2	28.4	97.9	3.3	26.7	18.2	55.7	23.5	6.4	19.8	123.5	10.7	49.3	3.4
1983	12.6	4.6	38.3	15.6	77.0	2.5	13.6	11.4	63.6	15.4	6.0	16.2	79.2	24.0	45.1	2.9
1984	11.4	5.0	47.4	21.7	78.0	1.6	15.7	10.6	50.0	13.9	6.6	16.0	86.8	8.8	53.3	3.5
1985	12.5	7.6	57.8	26.1	77.0	5.8	25.6	17.7	44.5	26.4	9.2	21.0	79.5	15.0	51.5	3.0
1986	14.4	6.4	39.1	17.0	43.4	5.0	21.2	12.9	38.5	12.2	7.6	16.1	46.2	8.4	52.7	3.2
1987	13.1	6.4	35.8	17.1	45.6	3.4	17.6	12.0	36.4	17.5	5.2	14.8	52.9	9.9	43.2	2.8
1988	9.2	3.0	25.0	6.0	24.8	1.5	12.2	7.5	7.2	9.0	6.5	13.0	20.0	9.0	19.7	2.7
1989	17.0	6.8	54.0	20.1	46.8	3.6	8.6	9.1	20.2	15.8	6.9	13.8	44.0	6.6	46.9	3.2
1990[1]	11.4	4.7	34.0	14.5	47.5	1.8	14.4	8.4	38.4	16.8	4.5	15.8	52.0	11.3	49.6	2.6

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.437

Oats Supply and Utilization in the United States

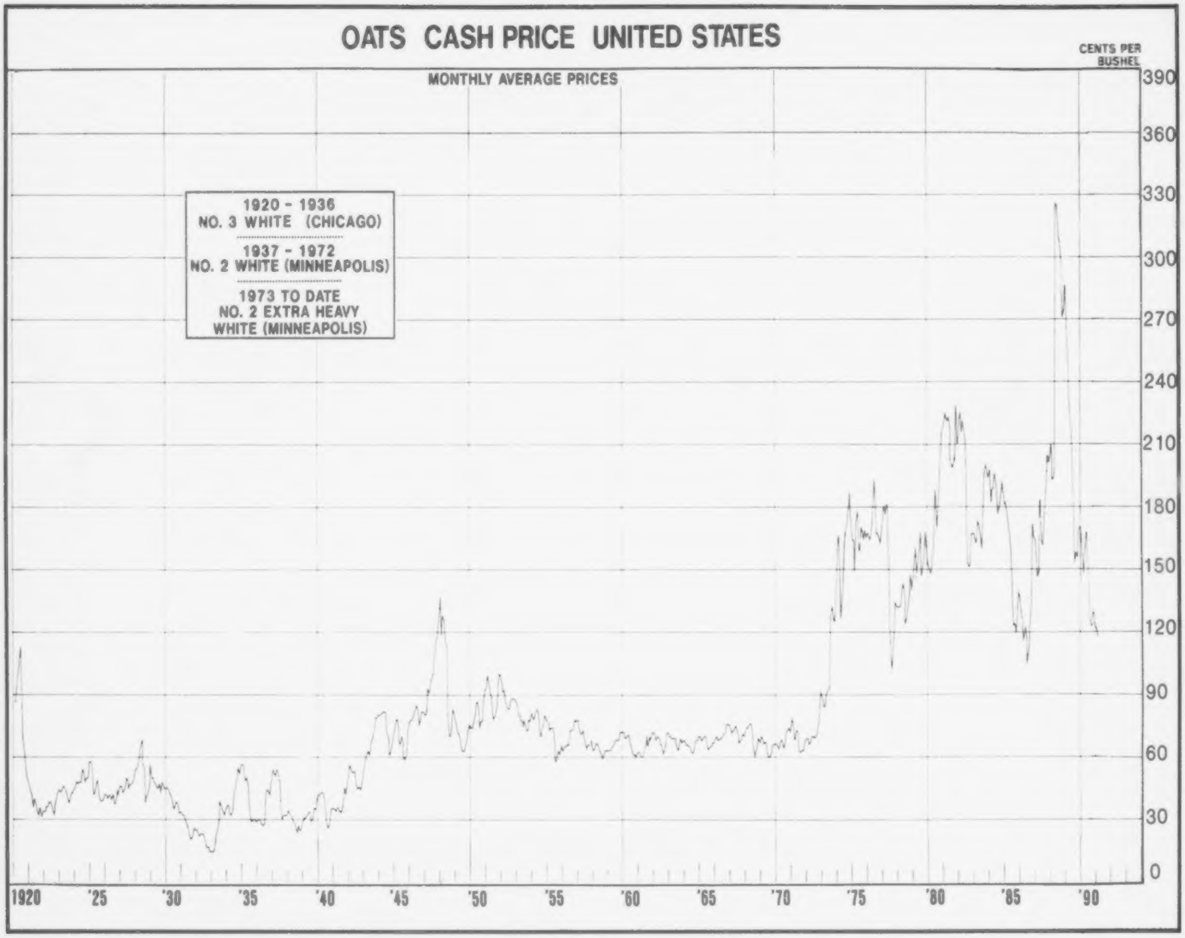
Crop Year Begin June	Acreage Planted	Acreage Harvested	Yield	Production	Imports	Total supply	Feed & residual	Food & industrial	Seed	Exports	Total use	Ending stocks	Farm price	Nat. avg. supp. rate	Target price
	– Mil. acres –		Bu/acre	Mil. bu										$/bu.	
1980/1	13.4	8.7	53.0	458.8	1.1	696.3	436.5	41.0	33.0	8.8	519.3	177.0	1.72	1.16	0
1981/2	13.6	9.4	54.2	509.5	1.5	688.0	458.0	41.2	34.2	2.7	536.1	151.9	1.88	1.24	0
1982/3	14.0	10.3	57.8	592.6	3.5	748.0	442.5	41.7	43.3	.8	528.2	219.8	1.49	1.31	1.50
1983/4	20.3	9.1	52.6	476.5	29.9	726.2	473.9	40.9	29.5	.9	545.3	180.9	1.62	1.36	1.60
1984/5	12.4	8.2	58.0	473.7	33.6	688.2	435.6	41.0	31.2	.5	508.3	179.9	1.67	1.31	1.60
1985/6	13.2	8.1	63.6	518.5	27.2	728.2	459.9	44.0	38.4	2.2	544.5	183.7	1.23	1.31	1.60
1986/7	14.7	6.8	56.3	385.0	32.4	603.4	392.3	45.0	30.6	2.8	470.7	132.7	1.21	.99	1.60
1987/8	17.9	6.9	54.3	373.7	45.7	553.0	360.5	45.0	34.0	1.5	441.0	112.0	1.56	.94	1.60
1988/9	13.9	5.5	39.3	217.6	62.9	392.5	193.8	72.7	27.1	.6	294.2	98.3	2.61	.91	1.55
1989/90[1]	12.1	6.9	54.3	373.6	65.8	537.7	265.5	91.3	23.2	.8	380.8	156.9	1.49	.85	1.50
1900/1[2]	10.4	5.9	60.1	357.1	60.0	574.1	329.7	— 120.0 —		.7	450.4	123.7	1.20	.81	1.45

[1] Preliminary. [2] Estimate. *Source: Economic Research Service, U.S.D.A.* T.430

Volume of Trading in Oats Futures at Chicago Board of Trade In Millions of Bushels

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1978–9	103.8	121.3	120.0	149.0	141.0	67.7	59.3	93.9	51.6	95.4	87.1	135.7	1,225.3
1979–0	127.8	111.6	76.1	98.6	96.0	47.1	56.9	85.3	53.8	81.1	131.5	144.8	1,110.6
1980–1	200.4	183.9	199.6	197.1	167.9	151.0	124.8	170.2	129.2	136.4	120.5	162.2	1,943.2
1981–2	125.3	134.6	117.0	144.5	264.9	221.0	166.7	184.7	204.3	223.6	196.5	247.9	2,231.0
1982–3	221.0	218.9	151.2	113.2	127.6	82.5	121.1	154.0	141.3	213.6	159.1	159.7	1,863.2
1983–4	160.1	254.5	180.4	95.1	102.4	57.9	58.9	91.9	77.1	89.8	59.8	76.6	535.0
1984–5	64.7	88.7	38.5	41.0	48.8	39.5	46.1	38.1	33.7	33.7	30.9	31.2	534.9
1985–6	42.6	55.6	37.2	57.0	53.9	35.2	54.7	41.7	41.9	62.0	59.2	62.3	603.3
1986–7	42.0	45.6	47.0	47.2	93.6	107.6	94.0	138.3	120.6	106.2	121.3	117.0	1,080.4
1987–8	103.7	153.6	109.4	135.4	139.4	116.6	92.1	121.2	146.6	162.1	162.6	267.1	1,709.8
1988–9	160.3	121.1	107.6	108.1	183.0	141.1	168.5	136.6	150.7	188.7	138.7	195.2	1,799.6
1989–90	148.7	174.9	104.2	86.7	191.9	64.5	123.3	158.7	169.4	225.7	270.0	231.8	1,949.8
1990–1	160.2	248.0	126.0	139.0	236.9	77.8	100.2	151.4					

Source: Chicago Board of Trade T.440



Average Cash Price[1] of No. 2 Heavy White Oats at Minneapolis In Cents Per Bushel

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average[1]	- No. 2 Heavy - White, Portland	Toledo
1977–8	138	115	102	111	117	134	132	132	132	133	140	143	127	144	136
1978–9	136	124	128	136	139	147	140	147	154	160	148	155	143	179	137
1979–0	168	160	147	155	165	167	159	152	150	148	152	162	157	187	160
1980–1	188	180	170	186	196	215	216	220	225	223	221	223	204	242	217
1981–2	218	202	199	202	209	228	210	223	226	216	221	216	214	236	223
1982–3	212	187	153	151	151	167	167	167	163	163	173	171	169	218	155
1983–4	167	160	179	194	200	197	194	198	182	188	189	196	187	195	201
1984–5	192	184	177	179	184	192	187	181	182	179	173	165	181	212	192
1985–6	159	144	123	124	119	132	139	137	130	12[illegible]	116	122	131	160	108
1986–7	118	105	112	129	139	172	166	164	156	14[illegible]	159	183	146	153	120
1987–8	164	161	177	185	197	205	202	210	206	19[illegible]	194	212	192	176	168
1988–9	326	325	309	307	299	271	274	287	259	249	230	222	280		226
1989–90[2]	197	172	159	158	161	168	170	156	148	157	163	168	165		140
1990–1[2]	152	137	125	123	129	130	124	122							

[1] Weighted average of reported daily cash sales. [2] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.435

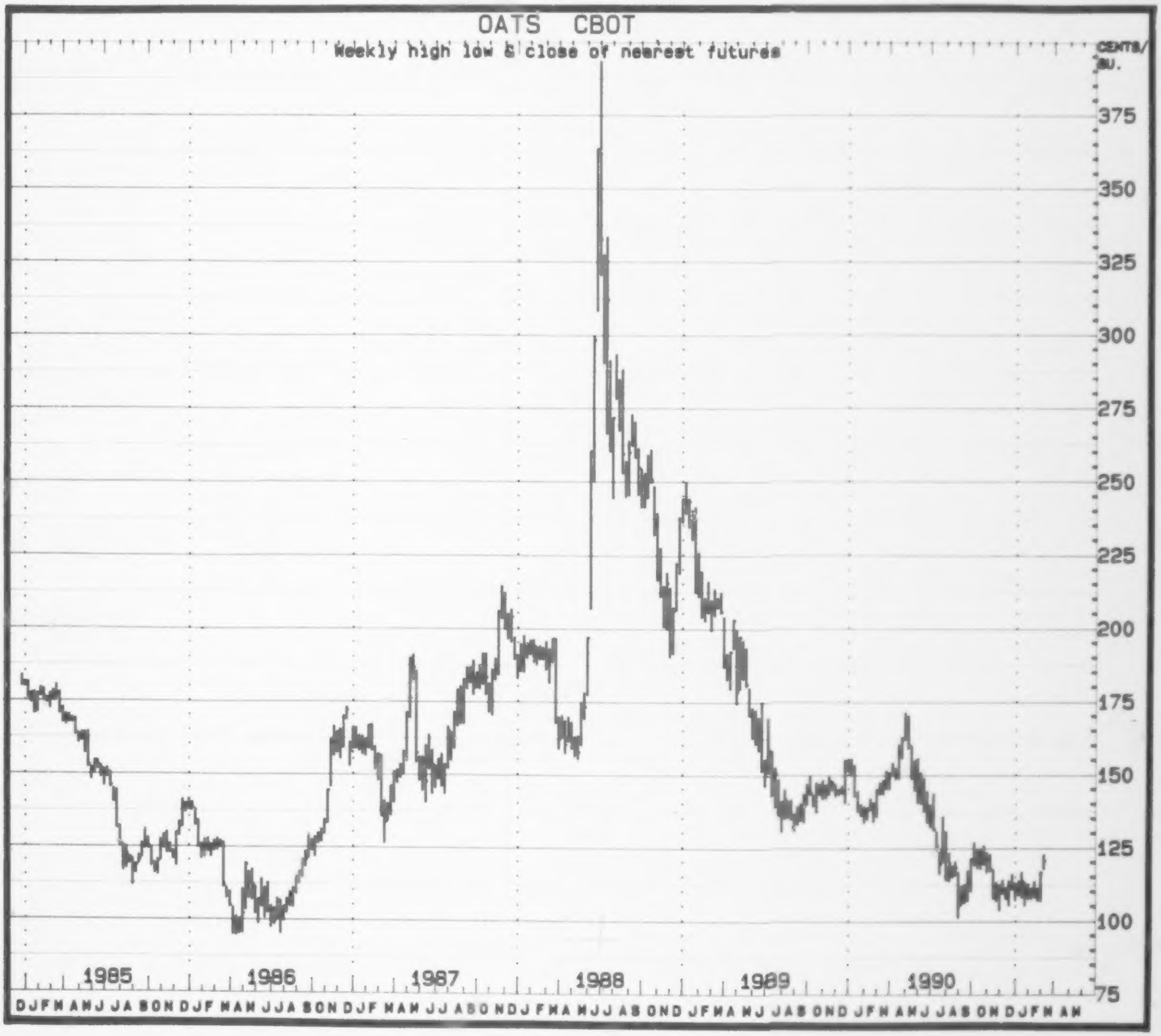
OATS

Average Open Interest of Oats at the Chicago Board of Trade In Thousands Bushels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1980	24,499	23,531	18,389	19,679	21,226	23,404	29,895	39,517	41,415	39,984	39,173	31,350
1981	31,927	38,119	28,845	26,146	24,986	30,697	27,576	26,105	25,575	35,410	42,468	38,553
1982	37,489	39,152	41,452	42,049	41,291	44,044	43,135	39,289	31,892	31,357	29,221	24,112
1983	25,641	33,640	36,640	47,839	48,755	45,556	45,013	50,584	67,392	40,143	32,498	23,127
1984	20,765	24,969	22,832	24,743	19,832	21,599	23,230	24,258	23,225	22,685	22,820	19,516
1985	18,430	19,392	17,351	17,202	14,659	14,815	15,240	18,312	15,692	19,054	21,332	17,504
1986	16,705	18,960	19,377	21,712	18,559	15,443	14,936	16,760	15,197	15,537	23,181	26,657
1987	31,648	36,004	33,508	30,655	26,271	24,536	28,090	36,166	35,212	35,173	28,988	29,724
1988	35,008	42,084	39,209	43,132	43,594	48,130	40,230	35,936	34,095	35,978	45,844	46,842
1989	50,341	51,226	50,761	50,283	47,606	48,831	48,967	47,272	48,824	55,834	59,311	56,240
1990	56,134	59,043	56,777	61,213	62,563	54,455	53,714	60,559	64,824	74,022	75,574	58,791
1991	59,450	64,161										

Source: Chicago Board of Trade

T.438



High, Low & Closing Prices of May Oats Futures at the Chicago Board of Trade In Cents per Bushel

Year of Delivery		Year Prior to Delivery								Delivery Year					Life of Delivery Range
		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1984	High	185	183½	200	226	220	206	199½	192¼	188	181½	185½	189¼	193	226
	Low	179½	177	181	189½	199¼	193	184½	180½	178	163	169	169¾	171½	163
	Close	179½	181½	197½	200	206	193	184½	188¾	180	168¾	185½	171	193	—
1985	High	—	191	185¾	181½	175	179¾	180¾	179¾	177½	174½	173¼	170	164	191
	Low	—	181	175	171	171	173	176	172½	169¼	167½	167¼	160¼	156¾	156¾
	Close	—	190	178½	172¼	173½	179	179	176¾	172¼	170¼	167¾	160½	160½	—
1986	High	163	161	150½	135	135¾	138¾	141¾	143½	142	129	122½	109	119	163
	Low	160	149¾	133½	127½	128	130½	134¾	133½	121½	118	106¾	94¼	101½	94¼
	Close	161	150¾	133¾	130	135	138½	135¼	142¼	124¼	120	108¼	109	108½	—
1987	High	116½	119	117½	123	128¾	135¼	150¾	155¾	157	162	147½	166¾	190½	190½
	Low	116¼	112½	110	115	120½	126	134¼	136	151¾	144	130½	141½	167¼	110
	Close	116¼	115½	113¼	122¾	128	133¾	146	155¾	154½	149½	140½	166¾	183¼	—
1988	High	159	174	170½	188½	188	190	194½	191½	187	184¼	182	169¾	170	194½
	Low	150¾	147	155½	162¾	176	167½	162	173	175	176¼	158½	157	155	147
	Close	150¾	160	170	179	180	169¼	189	175½	185	181	161½	159¼	166	—
1989	High	197½	340	325	286½	281	259	241	243	249½	229½	215½	202¾	197	340
	Low	186¾	194	247	249	247	238	205½	206	213	206	186½	174	179	174
	Close	197½	310	267	261¾	247¼	242	211¼	242¼	225½	211¾	187¼	178	180½	—
1990	High	200½	201	199¾	172	164¾	164	166	166	163	149¾	154¼	165½	171	201
	Low	190	179	157	158½	153½	155½	158½	158	143¼	142	145	148½	144½	142
	Close	194½	182	157	164	159¼	159¼	164½	161	143¼	147¼	150	165¼	144½	—
1991	High	184	183¾	178¾	157½	130½	142¼	139¼	129	122	119¼				
	Low	174	169	149½	133¼	129	134½	122	116½	111¼	113½				
	Close	175	173	157½	136	137¾	138½	128½	116½	114¾	117				

Source: Chicago Board of Trade

T.439

Average Price Received by U.S. Farmers for Oats In Cents Per Bushel

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average[1]
1980–1	148	150	153	163	165	184	192	198	201	208	205	205	179
1981–2	199	184	172	174	178	188	194	197	199	202	199	199	189
1982–3	188	157	139	135	132	140	144	146	148	149	154	154	149
1983–4	151	146	145	155	162	167	173	181	188	181	182	184	162
1984–5	180	168	162	160	169	164	172	174	169	168	168	160	167
1985–6	159	131	116	110	108	117	120	118	116	114	113	121	123
1986–7	110	90	86	99	110	132	144	146	147	145	150	157	121
1987–8	152	129	140	149	161	162	176	179	184	178	182	184	156
1988–9	263	286	254	257	256	241	247	252	246	241	224	213	261
1989–90	182	153	147	138	147	148	153	147	143	139	144	145	149
1990–1	133	115	106	108	114	116	118	112					

[1] Weighted average by sales. *Source: Crop Reporting Board, U.S.D.A.*

T.433

Oats Under Price Support Through the End of the Month (Cumulative Total from Current Season's Crop) In Millions of Bushels

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1980–1	—	1.8	3.4	4.4	4.9	5.7	6.0	6.1	6.2	6.3	6.3	6.3	6.3
1981–2	.6	3.4	6.1	7.4	8.0	8.7	9.3	9.5	9.6	9.6	9.6	9.6	9.6
1982–3	.1	1.2	4.0	5.8	6.9	7.7	8.3	8.5	8.8	9.0	9.1	9.1	9.1
1983–4	.1	1.0	1.4	2.8	3.1	3.2	3.4	3.5	3.5	3.6	3.6	3.6	3.6
1984–5	—	.9	2.1	2.6	2.8	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1
1985–6	.1	1.0	2.3	3.6	4.0	4.3	4.6	4.8	4.9	5.2	5.3	5.3	5.3
1986–7	.2	1.8	4.1	5.9	6.7	7.2	7.4	7.6	7.7	7.7	7.7	7.7	7.8
1987–8	—	.1	1.4	2.1	2.5	2.6	2.6	2.8	2.9	2.9	2.9	2.9	2.9
1988–9	—	.4	.6	.7	.8	.9	.9	1.0	1.0	1.0	1.0	1.0	1.0
1989–90	—	.6	1.1	1.3	1.3	1.5	1.6	1.7	1.8	1.8	1.8	1.8	1.8
1990–1	—	.4	1.0	1.2	1.2								

Source: U.S. Department of Agriculture

T.432

Olive Oil

World olive oil output in 1990/91 was forecast by the USDA to increase by almost 5 percent to 1.7 million tonnes. Olive oil makes up about 3 percent of world vegetable and marine oil production. Olive oil production is cyclical, with large crops often followed by small ones. The reduced crop of 1986 was followed by a bigger one in 1987 and a small crop in 1988.

In 1990/91, Italy's olive oil crop was forecast to decline rather sharply, reflecting the cyclical downturn in that country. At the same time, cyclical increases were recorded in Spain, Turkey and Tunisia, which more than offset the decline in Italy. Spain's crop was forecast to rise by over 30 percent. The EC subsidizes olive oil production to support farmer incomes. The olive harvest starts in the northern Mediterranean region during mid-November and moves south, with the end of harvest occurring in March.

With the larger olive oil availability in 1990/91, world exports were forecast at 490,000 tonnes, up by over 6 percent. Spain and Turkey were both expected to export more. Italy is a buyer of oil from Spain and Greece, and with a small 1990/91 crop, was likely to increase its imports by 10 percent. The U.S. remains a major importer of olive oil.

Global olive oil consumption was forecast by USDA to decline by about 2 percent to 1.8 million tonnes. Consumption of olive oil has shown very little growth in recent years, while use of other oils, like soy, has risen. The EC is the largest consumer of olive oil, with Italy the biggest single user, followed by Spain and Greece.

World ending stocks of olive oil were projected to total 600,000 tonnes in 1990/91, up nearly 2 percent from a year earlier.

World Production of Olive Oil (Pressed Oil)[2] In Thousands of Metric Tons

Crop Year[2]	Algeria	Greece	Italy	Jordan	Lebanon	Argentina	Morocco	Portugal	Spain	Syria	Tunisia	Turkey	Libya	Israel	World Total
1980–1	18	321	606	10	2	11	23	32	479	83	145	170	8	2	1,921
1981–2	15	229	515	5	12	14	34	23	300	44	70	60	8	4	1,350
1982–3	16	324	430	7	8	16	23	79	666	97	55	170	7	3	1,908
1983–4	13	230	824	10	15	13	28	9	258	31	150	40	8	4	1,644
1984–5	15	236	343	6	7	9	27	43	658	60	95	80	12	4	1,613
1985–6	18	345	607	8	5	9	40	33	397	48	105	70	9	2	1,711
1986–7	15	230	355	14	6	7	35	41	491	73	120	120	7	3	1,560
1987–8	10	287	688	3	5	9	38	35	734	32	95	55	7	3	1,900
1988–9[1]	10	296	361	12	7	10	30	23	399	90	58	90	6	4	1,500
1989–90[3]	16	320	540	7	5	9	70	41	551	30	130	35	8	3	1,640
1990–1[3]	10	210	280	8	6	8	40	35	612	83	170	90	7	3	1,720

[1] Preliminary. [2] Total pressed oil in marketing year beginning Nov 1; excludes sulfur oil extracted from residues. [3] Forecast.
Source: Foreign Agricultural Service, U.S.D.A.; Oil World

T.441

Average Unit Value of U.S. Olive Oil Imports In Thousand Dollars Per Metric Ton

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	1,336	1,313	1,301	1,307	1,424	1,357	1,379	1,342	1,438	1,361	1,397	1,284	1,353
1985	1,256	1,169	1,215	1,235	1,256	1,249	1,251	1,257	1,308	1,333	1,292	1,338	1,263
1986	1,402	1,400	1,402	1,469	1,492	1,495	1,587	1,554	1,751	1,572	1,732	1,589	1,537
1987	1,690	1,763	1,652	1,726	1,635	1,577	1,588	1,608	1,563	1,646	1,609	1,696	1,646
1988	1,682	1,694	1,736	1,699	1,701	1,669	1,465	1,562	1,691	1,582	1,493	1,606	1,632
1989	1,642	1,642	1,890	1,930	2,005	1,981	1,919	1,919	1,862	1,917	1,910	2,017	1,886
1990	1,892	1,940	1,931	2,034	2,047	2,047	2,044	2,169	2,142	2,029	2,245		

Source: U.S. Bureau of the Census

World Olive Oil Supply and Distribution In Thousands of Metric Tons

Crop Year	Production	Exports	Imports	Consumption	Ending Stocks	Crop Year	Production	Exports	Imports	Consumption	Ending Stocks
1981–2	1,337	204	296	1,593	700	1986–7	1,557	545	572	1,768	655
1982–3	1,908	360	401	1,627	1,022	1987–8	1,900	458	474	1,772	799
1983–4	1,644	296	338	1,810	908	1988–9	1,409	491	512	1,762	467
1984–5	1,600	484	503	1,729	799	1989–90[1]	1,631	463	528	1,804	591
1985–6	1,626	367	500	1,718	839	1990–1[2]	1,710	486	551	1,769	597

[1] Preliminary. [2] Forecast. *Source: Foreign Agricultural Service, U.S.D.A.*

Onions

Salient Statistics of Onions in the United States

Crop Year	Jan. 1 Stocks Frozen	Annual Pack Frozen	Imports Canned	Acres Harvested	Yield Per Acre	Production	Price Per Cwt.	Farm Value	Domestic Exports (Fresh)	Imports (Fresh)	Per Capita² Utilization (Lbs.)	Frozen
	Million Pounds			Acres	Cwt.	1,000 Cwt.	Dollars	$1,000	Million Pounds			
1982	28.4	182.3	8.7	125,920	332	41,861	8.24	307,501	140.7	165.7	15.7	.8
1983	31.9	139.6	9.5	123,640	315	39,166	12.40	439,297	183.2	204.9	15.4	.6
1984	28.8	156.5	12.1	128,450	338	43,068	10.60	415,196	273.9	267.2	16.2	.7
1985	23.4	142.0	14.0	122,760	367	45,059	9.08	347,328	121.6	263.7	16.9	
1986	27.4	185.5	12.3	115,540	375	43,615	10.90	439,239	164.4	247.6	17.2	
1987	35.7	188.0	13.0	123,720	364	45,113	12.50	505,163	195.8	371.2	16.8	
1988	29.6	198.9	14.1	128,950	362	46,733	9.75	413,996	245.1	407.0	18.1	
1989[1]	33.4	208.8	3.3	132,660	361	47,902	11.60	502,024		359.7	17.9	
1990[1]	39.6		3.3	140,640	380	53,508	10.30	495,347		400.0		

[1] Preliminary. [2] Includes fresh and processing. *Source: Economic Research Service, U.S.D.A.* T.443

Production of Onions in the United States In Thousands of Hundredweight (Cwt.)

Year	Spring: Texas	Spring: California	Spring: Arizona	Spring: Total (All)	Summer: New Mexico	Summer: Texas	Summer: California	Summer: Colorado	Summer: Idaho	Summer: Michigan	Summer: Minnesota	Summer: New York	Summer: Oregon	Summer: Total (All)	Grand Total
1982	3,492	2,805	876	7,173	1,643	1,544	10,395	3,255	2,475	2,336	168	4,550	4,821	34,464	41,637
1983	3,800	2,166	656	6,622	1,248	1,643	9,179	3,432	2,475	2,573	158	2,793	5,292	32,140	38,762
1984	3,348	2,734	805	6,887	1,365	1,560	9,819	4,636	2,323	2,933	156	3,384	6,785	36,770	43,657
1985	3,230	3,510	564	7,304	1,463	943	9,250	5,355	3,740	2,535	194	3,960	6,785	37,755	45,059
1986	3,600	2,886	660	7,146	1,810	1,537	9,953	4,590	3,710	1,653	208	3,456	5,945	36,155	43,301
1987	2,750	3,198	585	6,533	2,106	799	10,730	4,688	4,620	1,900	195	3,132	7,032	39,334	45,867
1988	3,220	3,315	450	6,985	2,752	861	10,512	5,535	4,028	2,000	126	2,925	6,649	39,748	46,733
1989[1]	3,225	3,080	446	7,386	3,000	1,040	10,125	5,520	3,996	2,212	161	2,912	6,710	40,516	47,902
1990[1]	2,520	3,570	473	7,655	2,870	1,377	12,675	5,130	4,180	2,442	208	5,120	6,865	45,853	53,508
1991[1]	3,264														

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.444

Cold Storage Stocks of Fresh Onions in the United States In Thousands of Pounds

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1982	3,474	3,963	3,319	1,813	—	—	275	—	—	952	—	—
1983	4,183	4,407	4,116	2,988	1,042	235	325	724	385	785	1,348	8,826
1984	8,648	7,006	2,527	343	1,230	556	527	1,212	5,270	5,618	5,354	6,949
1985	7,465	5,518	4,454	2,248	810	4,806	2,804	1,280	6,205	6,526	5,890	6,128
1986	5,171	5,325	2,572	1,573	545	1,769	1,627	1,001	346	2,116	4,693	7,784
1987	6,773	5,330	2,710	1,883	1,560	2,403	1,181	137	1,276	2,500	3,823	6,641
1988	4,406	1,982	192	35	575	2,551	1,587	268	3,508	7,453	10,499	9,018
1989	7,608	4,914	2,348	70	462	670	184	140	2,133	13,283	16,492	16,000
1990[1]	11,858	12,787	7,282	5,226	2,633	3,346	2,394	984	2,296	13,927	23,224	21,731
1991[1]	17,030	14,387										

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.445

FOB Price Received by Growers for Onions in the U.S. In Dollars Per Hundred Pounds (Cwt.)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average²
1982	17.60	17.40	13.20	12.70	12.60	9.43	11.90	12.60	7.83	7.12	6.90	6.35	8.24
1983	5.13	6.35	7.59	10.70	10.60	9.62	10.70	10.90	10.80	11.00	12.90	18.30	12.40
1984	17.30	19.40	25.20	25.30	13.90	11.00	14.00	13.60	11.90	9.52	10.30	11.90	10.60
1985	10.20	8.91	7.95	9.12	13.00	10.90	19.20	11.20	7.61	6.40	6.97	8.19	9.08
1986	7.70	7.01	7.07	9.37	9.31	10.70	11.20	9.79	10.90	12.00	10.60	11.80	10.90
1987	16.20	17.60	19.90	26.30	22.50	16.80	14.90	10.60	9.71	8.77	9.38	10.50	12.50
1988	15.70	15.70	15.10	16.80	8.90	8.52	10.40	8.97	12.50	12.10	12.20	12.00	9.75
1989	11.50	10.80	9.56	10.90	9.46	12.90	16.90	16.00	11.30	10.30	9.83	9.99	11.60
1990[1]	11.00	15.70	19.60	19.40	13.60	11.20	9.41	9.77	8.78	10.50	10.70	14.40	10.30
1991[1]	19.70												

[1] Preliminary. [2] Seasonal Average. *Source: Crop Reporting Board, U.S.D.A.* T.448

Orange Juice

Florida orange juice production was off sharply in the 1989/90 season, due to the late-1989 freeze that severely damaged citrus in the Southeast U.S. FCOJ futures prices rallied sharply following the freeze, and retail prices hit record highs in the late winter to early spring of 1990. Florida orange production was 110.2 million boxes for the season, with a yield of 1.23 gallons per box. While the on-tree crop suffered heavy damage from the freeze, the trees themselves recovered nicely.

The 1990/91 forecast indicated a strong recovery, with Florida orange production expected to be 159 million boxes and average yield 1.48 gallons per box. The recovery in the Florida crop was helped by harvesting from new trees just reaching bearing age, after the rapid increase in plantings following the freezes of the early 1980s. This trend was expected to continue, and Florida orange production was likely to expand throughout the 1990s.

Whereas Florida's orange crop was damaged by a Christmas-time freeze in 1989, California met the same fate a year later when several days of bitterly cold weather devastated the state's orange crop. Most California oranges go towards fresh consumption, however, so domestic orange juice production wasn't expected to be affected much.

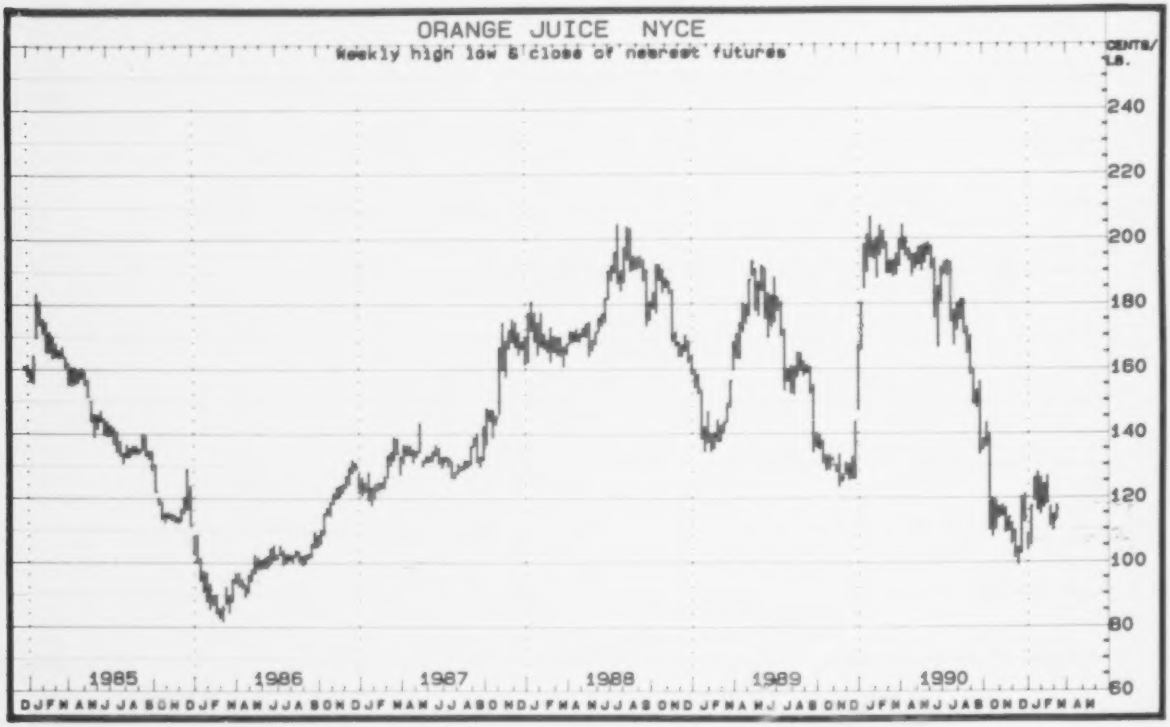
U.S. orange juice demand dropped in 1990 because of record prices after the Florida freeze. Total consumption was estimated at 636.8 million gallons (single-strength equivalent). Per capita U.S. consumption of orange juice averaged about 5 gallons a year from 1979/80 to 1988/89. Demand was expected to rebound in the 1990/91 season, but the extent of the recovery was uncertain. Typically, recessions hurt U.S. orange juice consumption.

Imports of orange juice, mainly from Brazil, made up for the supply shortfall after the 1989 freeze. With the recovery of the Florida crop, however, Brazilian imports were expected to drop by as much as 40 percent during the 1990/91 season. Brazil's 1990/91 orange crop was estimated at 240 million boxes, down from the previous season's record harvest of 290 million.

U.S. retail prices averaged a record $4.25/gallon in 1989/90, up about 14 percent from the previous season. Prices were expected to moderate in 1990/91, due to higher domestic production.

Futures Market

FCOJ futures and options are traded on the New York Cotton Exchange (NYCE).



World Production of Oranges In Thousands of Metric Tons

Season	Argentina	Australia	Brazil	Cuba	Egypt	Greece	Israel	Italy	Cyprus	Mexico	Morocco	South Africa	Spain	Turkey	United States	World Total[3]
1981–2	606	421	9,942	360	895	704	1,105	1,752		1,650	695	546	1,629	675	7,025	28,666
1982–3	639	392	9,210	400	1,201	665	889	1,498		1,380	670	510	1,652	656	8,827	29,294
1983–4	500	488	9,588	385	1,243	691	962	2,299		1,300	747	512	2,077	730	6,691	28,927
1984–5	653	489	1,715	390	1,182	775	941	1,960		1,000	686	486	1,365	760	6,109	29,355
1985–6	623	523	11,015	447	1,168	554	685	2,257	157	1,410	841	497	1,942	505	6,913	29,905
1986–7	621	475	10,650	496	1,235	881	815	2,424	204	1,683	650	577	2,059	750	7,122	31,196
1987–8	650	394	10,400	508	1,387	462	627	1,343	138	1,942	891	682	2,442	700	7,903	30,990
1988–9[1]	620	524	14,150	520	1,199	770	546	2,170	170	2,268	994	739	2,216	740	8,272	36,447
1989–90[2]	750	486	12,150	520	1,397	933	877	2,071	223	2,200	775	690	2,365	650	7,010	33,868
1990–1[2]				520	1,400	819	790	1,850	192	2,400	890		2,476	750	7,470	

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.449

U.S. Salient Statistics of Oranges & Orange Juice

Season	Production[2] — Million Boxes			Farm Price $ Per Box	Farm Value Million $	Frozen Concentrated Orange Juice—Florida — In Million Gallons				Florida Crop Processed — Million Boxes				Brazilian U.S. Imports of Frozen Concentrated Orange Juice — In Million Gallons[4]		
	California	Florida	Total U.S.			Carry-in	Pack	Total Supply	Total Season Movem.	Frozen Concentrates	Chilled Products	Total Processed	Yield Per Box (Gall.)	Pack	Exports Total	Exports To U.S.
1981–2	41.9	1[illegible].8	176.7	5.30	1,295.3	69.0	214.9	283.9	230.5	105.2	16.5	126.1	1.28			
1982–3	76.1	139.6	225.2	6.61	1,167.3	53.4	228.4	281.8	239.0	114.6	18.3	135. 5	1.48	189.6	155.2	
1983–4	48.5	116.7	169.5	5.85	1,317.1	42.8	239.9	282.7	228.3	94.5	17.0	114.4	1.29	175.2	201.4	105.1
1984–5	52.4	103.9	158.8	7.68	1,303.9	54.4	209.6	264.0	215.7	86.1	14.9	102.9	1.38	250.3	246.5	174.5
1985–6	53.9	119.2	175.7	9.16	1,455.4	48.3	215.1	263.5	226.5	96.1	17.3	114.7	1.38	285.9	190.7	112.2
1986–7	57.9	119.7	181.2	6.18	1,090.4	37.0	228.0	265.0	225.1	96.2	19.7	116.8	1.51	210.4	277.8	139.8
1987–8	59.0	138.0	200.3	7.18	1,322.5	39.8	240.9	280.7	238.6	110.2	23.3	134.4	1.55	244.8	254.5	120.5
1988–9[1]	58.9	146.6	207.2	7.08	1,773.7	42.1	239.1	281.2	234.9	113.7	29.9	144.7	1.54	344.8	307.7	123.1
1989–90[3]	70.9	110.2	183.9	5.99	1,848.6	46.3				73.6	33.8	108.1	1.23	284.5	292.6	75.0
1990–1[3]	27.0	159.0	187.8		1,454.9					115.0	39.3	168.0	1.52	345.0	319.4	87.0

[1] Preliminary. [2] Fruit ripened on trees, but destroyed prior to picking is not included. [3] Estimate. [4] 42° BRIX.
Source: Economic Research Service, U.S.D.A. Florida Citrus Processors Assoc. T.450

U.S. Cold Storage Stocks of Orange Juice Concentrate[2] In Millions of Pounds

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1982	753.1	957.0	1,172.3	1,300.7	—	—	1,406.2	—	—	846.5	—	—
1983	835.9	1,028.1	1,016.2	963.3	1,187.0	1,408.0	1,318.6	1,192.4	960.8	810.7	684.8	595.0
1984	631.1	785.7	956.3	976.3	920.1	998.2	903.2	780.4	707.0	595.8	557.3	564.8
1985	651.6	883.4	1,050.6	1,102.7	1,188.6	1,229.5	1,063.7	1,036.1	912.4	882.2	778.8	656.0
1986	679.2	888.4	966.8	911.5	1,031.6	1,047.5	1,056.9	920.3	855.3	715.4	577.8	524.8
1987	621.2	874.8	1,012.7	933.8	999.0	1,109.1	1,105.1	942.1	792.6	840.0	652.8	569.0
1988	662.4	903.8	1,072.9	1,004.1	1,019.0	1,122.1	1,171.8	998.5	827.0	693.3	638.7	589.5
1989	721.6	980.9	1,155.9	1,087.0	1,144.8	1,296.1	1,324.8	1,167.5	932.6	808.4	725.7	669.7
1990[1]	749.6	926.6	1,046.5	1,119.2	980.9	1,148.2	1,074.8	1,008.1	901.4	797.1	802.0	870.7

[1] Preliminary. [2] Adjusted to 42° BRIX basis (9.896 lbs./gal.). *Source: Crop Reporting Board, U.S.D.A.* T.451

Average Open Interest of Frozen Concentrated Orange Juice Futures In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1982	9,335	9,297	7,747	6,605	6,265	6,551	5,979	6,155	6,057	5,678	6,584	8,573
1983	9,497	8,718	6,645	6,281	6,173	6,344	5,930	6,256	6,301	6,317	6,027	6,108
1984	8,353	10,294	12,086	11,809	10,745	12,763	12,444	11,340	10,375	9,989	9,412	8,776
1985	8,023	7,094	6,378	6,588	6,027	5,854	5,214	4,826	4,367	5,092	6,352	11,571
1986	10,440	8,532	7,986	7,010	6,909	6,860	7,198	6,669	6,924	8,287	9,270	10,849
1987	11,222	10,283	10,031	9,206	8,658	8,104	6,994	6,665	7,229	8,810	9,000	10,212
1988	11,683	14,089	16,708	14,576	11,861	11,427	11,235	11,192	9,708	8,564	9,170	8,697
1989	7,169	6,959	7,009	7,821	8,374	9,767	8,340	7,531	6,857	7,218	7,029	9,887
1990	9,667	11,067	11,877	11,952	10,528	10,229	9,413	7,485	6,867	5,939	5,802	6,983
1991	6,717	6,457										

Source: Citrus Assoc. of the N.Y. Cotton Exchange T.456

ORANGES AND ORANGE JUICE

High, Low & Closing Prices of May Orange Juice[1] Futures at New York In Cents per Pound

Year of Delivery		Year Prior to Delivery										Delivery Year					Life of Delivery
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Range
1985	High	170.00	176.00	181.50	179.50	168.50	172.00	185.00	181.75	172.90	170.00	183.50	178.00	170.35	161.40	159.90	185.00
	Low	155.00	166.50	174.50	167.00	164.90	167.00	167.50	166.50	166.80	162.40	159.20	166.60	160.30	154.70	151.00	114.90
	Close	165.60	176.00	178.65	168.00	166.90	169.70	181.20	166.90	169.90	163.90	178.60	168.10	161.60	158.20	151.20	—
1986	High	166.25	160.50	152.45	140.90	133.45	127.00	128.90	128.10	116.60	131.50	113.25	92.95	95.70	96.40	101.00	178.40
	Low	160.35	152.50	136.70	133.10	124.00	122.95	122.65	111.95	113.00	107.25	88.30	83.50	82.60	89.00	93.10	82.60
	Close	161.30	152.50	140.00	133.15	124.65	122.95	128.50	114.45	114.55	108.15	89.00	84.30	95.60	92.75	96.55	—
1987	High	91.40	94.75	101.85	109.95	110.00	108.70	109.50	120.20	123.70	134.80	128.80	127.85	138.50	136.25	143.00	143.00
	Low	84.50	90.50	92.95	100.40	101.10	105.80	106.80	108.00	119.50	123.95	118.60	120.85	127.00	128.10	132.25	84.45
	Close	91.40	92.75	100.80	108.25	107.70	106.20	108.25	119.70	123.65	125.10	121.20	126.80	128.90	132.25	130.80	—
1988	High	130.05	126.50	126.95	123.90	124.25	128.10	132.00	145.25	171.00	174.00	176.70	173.65	167.50	172.00	174.10	176.70
	Low	123.40	123.40	124.15	119.25	120.15	122.90	128.50	132.20	146.00	164.50	165.00	156.25	156.50	167.70	167.15	119.25
	Close	123.40	125.00	124.20	120.50	122.85	128.10	132.00	145.25	167.50	165.70	166.85	159.00	167.25	170.15	167.15	—
1989	High	152.45	155.50	155.25	168.50	172.00	173.50	170.50	172.50	173.00	166.60	156.25	143.90	168.00	179.90	193.10	193.10
	Low	144.85	148.50	151.05	151.70	167.00	167.00	162.20	166.25	163.50	156.60	132.00	132.35	139.05	162.75	176.10	132.00
	Close	148.95	154.80	151.40	168.45	171.65	169.25	167.25	172.00	164.50	157.90	138.40	140.20	166.70	178.45	182.70	—
1990	High	149.80	163.50	170.60	161.50	153.10	143.15	141.55	133.10	127.80	159.00	205.85	199.75	199.25	204.00	197.50	205.85
	Low	149.05	148.55	161.25	146.30	138.00	137.00	131.00	124.40	122.50	125.50	166.00	185.10	186.15	188.20	190.00	122.50
	Close	149.80	163.50	161.30	152.10	141.80	141.50	131.00	126.00	126.90	159.00	196.50	190.85	198.95	193.15	190.30	—
1991	High	175.00	179.25	184.50	184.00	164.25	163.55	141.40	139.50	119.00	124.50	128.90	126.00				
	Low	171.00	171.75	174.75	156.25	157.75	142.40	130.25	108.50	108.30	101.50	107.00	109.50				
	Close	175.00	173.50	184.50	159.10	158.00	142.40	132.60	113.00	111.95	119.00	119.35	111.10				

[1] Frozen concentrated orange juice. *Source: Citrus Associates of the N.Y. Cotton Exchange, Inc.*

T.455

Volume of Trading of Frozen Concentrated Orange Juice Futures In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	33,189	36,206	34,643	32,774	26,882	30,273	23,803	15,246	36,508	23,693	11,737	12,410	317,364
1985	28,768	20,572	8,135	11,529	9,514	10,011	8,238	7,893	9,395	16,320	11,115	49,268	190,758
1986	39,756	24,971	21,413	13,209	13,909	14,979	10,469	9,887	10,940	17,513	9,551	24,946	211,543
1987	28,566	24,342	27,999	19,569	10,651	15,470	8,805	10,710	12,330	20,321	20,724	26,758	266,641
1988	40,976	42,153	37,295	28,937	22,931	36,877	23,752	27,118	26,228	26,922	19,399	25,451	358,039
1989	26,156	26,419	28,501	26,855	30,272	32,051	23,403	19,698	17,119	18,069	15,893	39,668	304,104
1990	53,133	32,035	31,676	28,025	23,656	45,028	21,302	24,029	13,131	21,793	16,473	30,739	342,574
1991	35,037	28,221											

Source: Citrus Assoc. of the N.Y. Cotton Exchange

T.452

Wholesale Index Price of Frozen Orange Concentrate[1] 1982 = 100

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1985	127.3	133.1	133.2	132.9	133.5	132.4	130.5	126.0	123.9	119.3	114.9	112.8	126.7
1986	104.4	102.2	97.6	94.4	94.1	94.3	94.2	94.2	93.7	96.0	98.6	101.4	97.1
1987	106.9	106.9	107.4	109.5	109.7	110.0	110.1	111.0	110.6	110.6	117.2	129.9	111.7
1988	132.1	140.5	142.4	141.0	142.0	144.0	141.6	142.0	141.7	140.7	140.8	139.1	140.3
1989	136.4	127.7	126.5	126.5	131.7	139.2	140.6	140.3	134.0	131.6	123.1	121.7	131.6
1990	137.6	162.4	162.9	159.9	159.7	160.0	160.4	160.8	149.8	147.2	120.9		

[1] Packer to wholesale distributor, or retail chain store, f.o.b. plant. *Source: Bureau of Labor Statistics* (0242–0301)

T.454

Average Price of Oranges (Equiv. On-Tree) Received by Growers In Dollars Per Box

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	4.93	5.21	4.61	5.44	7.89	9.06	12.93	13.26	14.67	14.45	10.24	8.46	9.26
1985	7.72	7.20	7.12	7.36	7.39	7.11	6.19	5.49	5.78	4.86	5.85	4.89	6.41
1986	4.20	4.01	4.07	3.76	4.24	4.18	3.58	3.91	4.59	6.50	6.46	4.79	4.52
1987	4.64	4.80	4.96	5.40	5.99	6.40	6.02	5.41	7.43	10.43	9.10	6.35	6.41
1988	6.43	6.59	6.87	7.76	8.79	8.78	6.47	5.44	5.56	3.39	6.15	6.76	6.58
1989	6.51	6.45	6.26	7.29	8.39	8.51	7.27	6.52	6.54	6.29	6.28	5.75	6.84
1990	4.95	5.52	6.04	7.20	7.84	7.15	6.02	5.07	5.31	4.48	6.31	6.18	6.01
1991	6.62												

Source: Economic Research Service, U.S.D.A.

T.453

Palm Oil

In terms of world vegetable oil production, palm oil ranks second, following soybean oil. USDA forecast world palm oil output in 1990/91 at 11.2 million tonnes, up 3 percent from the previous season. Malaysia continued to dominate world production with output forecast at 6.4 million tonnes, about the same as a year earlier. Malaysian output has increased significantly in recent years. Indonesia is the second largest producer.

Palm oil consumption was forecast to be 10.7 million tonnes, 4 percent more than in the previous season. Palm oil accounted for 19 percent of world vegetable oil use, rising from a share of 16 percent in 1986/87. The major consumers were India, Pakistan, Japan, Nigeria and China, as well as Malaysia and Indonesia. Use in Turkey and Egypt has increased, and Iran has bought more.

Malaysia and Indonesia exported more palm oil to the Soviet Union in 1990/91. At the same time, exports to India and Bangladesh declined, as those countries diversified their sources of vegetable oil supplies. Sales to China were reportedly increasing. The proximity of Malaysia and Indonesia to Asian markets allows them to compete on a price basis, due to lower transportation costs. The fact that exports have increased to the USSR and the EC indicate that palm oil is finding wider acceptance outside traditional Asian markets.

However, in the U.S., palm oil usage has declined significantly over the last few years, as it has been replaced by oils containing less saturated fats, such as soyoil and canola. U.S. palm oil imports reached a high of over 435,000 tonnes in 1975 and fell to only 26,000 tonnes in 1990.

World exports of palm oil declined to 6.7 million tonnes in 1990/91 from 6.9 million the season before. Malaysia is the leading exporter, with shipments expected to be 5.4 million tonnes. World ending stocks of palm oil were put at 2.4 million tonnes, almost 14 percent more than a year earlier.

World Palm Oil Statistics In Thousand Metric Tons

	Production									Exports								
Crop Year	Malaysia	Colombia	Ecuador	Indonesia	Ivory Coast	Papua N. Guin.	Zaire	Nigeria	World Total	Malaysia	Indonesia	Ivory Coast	E.C.-12	Singapore	Netherlands	Papua N. Guin.	World Total
1984–5	3,817	120	85	1,185	164	120	160	550	6,811	3,240	652	56	153	977	92	115	4,431
1985–6	4,773	141	110	1,280	217	125	160	600	8,056	4,065	759	94	169	719	101	120	5,360
1986–7	4,560	148	97	1,300	227	145	150	650	7,960	3,977	637	120	171	563	104	135	5,196
1987–8	4,852	176	111	1,370	198	145	145	640	8,360	4,128	859	65	158	456	101	135	5,590
1988–9	5,636	231	121	1,500	203	160	140	575	9,470	4,670	750	52	195	617	130	140	6,060
1989–90[1]	6,412	261	135	1,750	206	160	140	650	10,940	5,520	750	49	213	700	150	140	6,890
1990–1[2]	6,200								11,010	5,370							6,800

[1] Preliminary. [2] Projected. *Source: Economic Research Service, U.S.D.A.* T.457

Palm Oil—U.S. Supply & Distribution In Millions of Pounds

	Supply			Utilization								Prices		
				Food Uses										
Year Begin. Oct.	Imports	Stocks Oct. 1	Total Supply	Shortening	Margarine	Salad or Cooking Oil	Other	Total	Non–Food Uses	Total Disappearance	Exports (& Shipments)	Palm Kernel Oil ¢ Per Pound	U.S. Ports C.I.F. ¢ Lb. (Cal. Yr.)	Malaysia[2] U.S. $ Metric Ton
1984–5	372	51	423	226				270		370	0		33.3	569
1985–6	611	53	664	304				364		590	0		27.2	274
1986–7	474	74	549	247				279		507	0		14.4	310
1987–8	362	40	401	173				198	45	342	0		17.3	402
1988–9[1]	298	59	357	151				205	43	315	4		21.4	358
1989–90[3]	249	37	286					120		254	4		17.9	271
1990–1[3]	254	29	283							249	4		14.5	313

[1] Preliminary. [2] Malaysia FOB; RBD. [3] Estimate. *Source: Economic Research Service, U.S.D.A.* T.458

Average Wholesale Palm Oil Prices, CIF, Bulk, U.S. Ports In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1983	19.5	19.0	18.8	19.8	20.7	19.5	20.6	26.2	30.6	31.1	32.0	37.5	24.6
1984	40.5	38.2	36.6	37.0	43.0	36.3	28.2	28.4	30.3	28.3	32.4	29.8	33.3
1985	28.3	29.0	29.5	34.3	34.6	31.6	28.7	25.1	23.5	21.7	19.9	19.7	27.2
1986	18.4	15.6	13.3	14.3	14.1	14.1	13.2	12.1	11.7	14.6	16.1	15.3	14.4
1987	16.97	17.60	16.90	16.95	16.85	17.13	16.01	16.12	17.19	17.30	17.76	21.05	17.32
1988	24.71	22.56	19.36	19.93	20.67	22.83	24.21	20.95	20.34	20.13	20.90	20.11	21.39
1989	19.27	19.45	19.20	18.79	20.37	20.26	18.88	15.31	15.82	16.10	16.05	15.16	17.89
1990	15.14	13.94	14.53	14.68	13.91	14.98	14.16	15.04	14.63	15.21	16.24		

Source: Economic Research Service, U.S.D.A. T.459

Paper

Major newsprint producers pushed through a price increase of about 5 percent in midyear 1990, but most companies were still expecting substantially lower earnings than a year earlier. The price of premium pulp continued to hold around $830 a tonne at midyear, but sales at that level were slower than in 1989. The benchmark Eastern U.S. list price for newsprint increased by 5.4 percent in June to $685 per tonne. Since sales are actually made at a discount, the new price was about $555.

The American Newspaper Publishers Association estimated that newsprint consumption by all U.S. users in the first nine months of 1990 was 9.028 million tonnes, up 0.4 percent from the same period a year earlier. Consumption of newsprint by daily newspapers increased by less than 1 percent to 6.742 million tonnes.

U.S. exports of recycled paper grew rapidly in the 1980s, rising from 2.6 million tonnes in 1983 to 6 million in 1989. According to a spokesman for a company that exports recycled paper, U.S. exports were likely to grow at a 10 percent annual rate in the first half of the 1990s. The U.S. is the world's leading exporter of recycled paper, a consequence of its being the largest producer of waste paper in the world. Paper recycled domestically was expected to increase from 27 million tonnes in 1990 to 40 million by 1995.

Shipments of (Paper Products) Shipping Containers[1] In Millions of Square Feet Surface Area

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1985	22,918	20,230	22,028	22,871	22,595	21,545	22,257	23,441	22,300	25,838	21,003	19,889	267,453
1986	24,531	21,700	22,479	25,290	23,340	23,495	23,949	23,821	24,491	27,256	21,506	22,012	283,921
1987	24,857	22,811	24,851	25,631	23,670	25,490	25,419	25,058	25,898	27,755	23,357	23,161	297,827
1988	24,782	24,742	27,327	26,132	25,036	25,920	24,560	27,091	26,153	27,797	24,876	23,467	308,509
1989[2]	26,444	24,086	26,919	26,367	26,934	26,753	24,654	27,837	25,441	28,982	25,349	23,202	313,398
1990[2]	27,605	24,182	26,698	26,679	27,398	26,330	26,494	28,115	25,410	30,526	24,955	21,412	315,804

[1] Corrugated & solid fiber. [2] Preliminary. *Source: National Paperboard Association* T.463

Index Price of Coated Printing Paper, No. 3 (Dec. 1982 = 100)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1987	116.1	116.1	116.4	115.7	115.5	115.5	115.5	115.9	116.1	119.9	120.4	120.2	116.9
1988	120.9	121.2	122.2	121.8	122.0	122.0	124.0	126.3	127.5	127.5	127.7	127.8	124.2
1989	127.8	127.8	129.3	130.3	130.5	130.7	130.5	130.5	130.3	130.2	130.3	130.1	129.9
1990[1]	130.3	130.2	130.2	130.3	130.3	130.3	130.2	130.2	130.2	130.2	130.2	130.2	130.2

[1] Preliminary. *Source: Bureau of Labor Statistics* (0913–0113) T.470

Salient Statistics of Newsprint in the United States and Canada In Thousands of Metric[3] Tons

	United States													Canada		
			Imports[3] By Countries of Origin									Stocks, Dec. 31				
Year	Production	Exports	Canada	Finland	Italy	Norway	Sweden	U.K.	South Africa	Total	Consumption	At Mills	At Publishers[2]	Production	Exports	Stocks At Mills
1984	5,025	258	7,688	31		63	86			7,899	11,431	60	874	9,013	8,133	298
1985	4,924	279	6,674	42	23	71	119	17	34	8,472	11,587	57	910	8,988	7,964	290
1986	5,107	337	6,735	24	1	80	135	11	39	8,589	11,937	49	849	9,289	8,181	277
1987	5,300	284	7,087	22	14	57	221	26	21	8,975	12,322	36	900	9,669	8,574	189
1988	5,427	381	7,087							7,794	12,244	48	932	9,840	8,640	288
1989[1]	5,523	485	6,799							7,678	12,241	56	766	9,640	8,513	321
1990[1]	5,997	427	6,423							6,587	12,127	46	816	9,068	7,943	315

[1] Preliminary. [2] Reporting only to A.N.P.A.; group represents about 75%. [3] Data for imports are in thousands of short tons.
Source: Newsprint Service Bureau, A.P.I. T.464

Producer Price Index of Standard Newsprint (1982 = 100)[2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	102.6	102.8	102.7	102.6	102.7	102.3	102.4	102.0	102.1	105.7	105.7	105.6	103.3
1987	107.9	108.6	108.4	108.5	108.7	108.7	112.7	116.3	116.9	116.9	117.1	117.0	112.3
1988	127.1	127.9	127.9	127.7	127.9	127.9	127.8	127.7	127.8	127.7	127.5	126.6	127.6
1989	126.5	126.0	126.6	126.5	123.2	122.0	121.3	120.7	120.4	119.3	119.0	118.3	122.5
1990[1]	116.8	115.4	115.6	115.5	116.6	121.6	122.2	122.2	121.8	122.0	121.9	122.2	119.5

[1] Preliminary. *Source: Bureau of Labor Statistics* (0913–0291) T.468

U.S. Production & Consumption & Foreign Trade of Woodpulp In Thous. of Short Tons[6]

Year	Woodpulp Production							Consumption in the Manufacture of Paper and Board			All Grades Woodpulp		Inventories—Dec. 31			
		Sulfate													Woodpulp	
	Dissolving Pulp	Bleached	Paper Grades[2]	Unbleached	Groundwood	Semi-Chemical	Total Wood Pulp	Wood Pulp[4]	Waste Paper[5]	Pulpwood[6]	Exports	Imports	Pulp-Wood	Waste Paper	At Pulp Mills	At Paper & Board Mills
1983	1,261	——	42,358	——	5,067	3,851	52,537		14,696	85,442	3,674	4,095	5,229	923	554	550
1984	1,206	——	44,690	——	5,506	4,069	55.470		15,926	87,646	3,694	4,490	5,574	1,053	759	545
1985	1,174	——	43,696	——	5,251	4,027	54,147		15,623	85,744	3,794	4,466	5,046	969	650	492
1986	1,258	——	46,081	——	5,476	4,191	57,005		17,285	91,434	4,308	4,340	4,794	838	458	496
1987	1,312	——	48,293	——	5,702	4,246	59,552		17,993	93,946	4,727	4,531	5,096	920	394	529
1988	1,367	——	49,493	——	5,943	4,358	61,161		19,021	95,497	5,160	4,506	4,888	1,044	433	622
1989[1]	1,425	——	50,181	——	6,029	4,363	61,998		20,010	98,414	5,653	4,673	5,462	1,095	535	519

[1] Preliminary. [2] Chemical pulp. [3] Or exploded. [4] Does not include wood pulp consumption by plants classified outside paper & board industries. [5] Waste paper; straw; rags; cotton fibre; manila stock; etc. [6] Data for pulpwood expressed in thousands of cords of 128 cu. ft.—roughwood basis. Pulpwood includes slabs, chips, & millwaste. *Sources: Bureau of the Census; American Paper Institute.* T.465

Paper and Board Production in the United States In Thousands of Short Tons

Year	Paper							Paperboard				Construction[3]		
	Newsprint	Coated (Shipments)	Tissue Paper	Uncoated Free Sheet (Shipments)	Groundwood Paper Uncoated (Shipments)	Packaging & Industrial Converting[3] (Shipments)	All Paper Total	Other Bleached Paperboard	Corrugating Material	Unbleac. Kraft	All Paperboard Total	Construction (Paper)	All Construction Total	Total All Types
1981	4,752	4,940	4,518	8,234	1,463	3,880	31,030	1,900	6,000	14,800	31,232	1,200	3,847	66,440
1982	4,574	4,974	4,438	8,184	1,471	3,688	30,422				29,065			
1983	4,688	5,716	4,789	9,060	1,531	3,666	32,823				32,177			
1984	5,025	6,249	4,921	9,510	1,565	3,666	34,447				34,039			
1985	4,924	5,875	4,941	9,952	1,521	3,403	33,996				33,034			
1986	5,107	6,263	5,095	10,681	1,540	3,303	35,510				35,379			
1987	5,300	6,860	5,301	11,206	1,498	2,840	36,876				37,442			
1988	5,427	7,359	5,476	11,277	1,624	2,800	38,352				38,103			
1989[1]	5,523	7,215	5,636	11,081	1,743	2,681	38,248				38,456			

[1] Preliminary. [2] Paper & board. [3] Unbleached kraft. *Source: Bureau of the Census* T.467

Index Price of Wood Pulp, Bleached Sulphate Softwood 1982 = 100

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1987	114.5	116.7	118.3	122.5	124.3	124.1	125.1	125.5	125.7	130.1	132.4	132.9	124.3
1988	138.6	143.7	144.4	149.3	151.0	154.8	159.9	161.3	161.5	163.0	165.7	167.5	155.1
1989	176.2	176.9	178.1	180.7	184.8	184.8	184.4	184.4	184.4	185.8	185.8	184.0	182.5
1990[1]	183.2	183.0	180.9	179.3	177.1	174.9	174.5	173.5	173.5	170.2	170.9	170.4	176.0

[1] Preliminary. *Source: Bureau of Labor Statistics* (0911–0211) T.469

Index Price of Shipping Sack Paper[1] 1982 = 100[2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	231.8	238.8	247.2	247.2	247.8	247.8	241.1	241.1	241.1	241.1	241.1	233.0	240.3
1985	233.0	233.0	225.7	223.9	227.5	222.7	211.0	211.0	211.0	211.0	211.0	211.0	219.3
1986	211.0	211.0	211.0	218.0	218.0	218.0	218.0	218.0	218.0	226.8	234.9	234.0	219.7
1987[2]	110.1	113.2	114.0	117.3	117.3	117.3	117.3	117.3	120.4	121.7	125.0	125.4	118.0
1988	125.4	125.4	129.2	130.4	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2	131.3
1989	133.2	144.4	144.4	144.4	144.4	144.4	144.4	144.4	144.4	144.4	144.4	144.4	143.5
1990	144.4	144.4	144.4	144.4	144.4	144.4	144.4	144.4	N.A.	N.A.	N.A.	N.A.	144.4

[1] Unbleached kraft. [2] Data prior to 1987 are for Dec. 1973 = 100. *Source: Bureau of Labor Statistics* (0913–0304) T.471

Index Price of Paperboard 1982 = 100

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	103.8	104.2	104.7	105.0	105.5	105.3	106.8	107.8	107.8	108.3	109.1	110.1	106.6
1987	113.9	115.5	115.5	116.2	115.8	115.9	116.1	119.8	121.3	122.1	122.5	123.1	118.1
1988	126.6	127.1	130.5	132.6	133.4	134.0	134.3	134.5	136.3	136.4	136.5	136.5	133.2
1989	137.7	138.7	140.4	142.3	142.5	141.0	139.5	140.0	139.7	139.8	139.7	140.0	140.1
1990[1]	139.2	138.9	138.9	137.6	136.0	135.5	135.0	133.4	133.1	133.9	135.0	133.9	135.9

[1] Preliminary. *Source: Bureau of Labor Statistics* (0914)

Peanuts and Peanut Oil

World peanut production in 1990/91 was forecast by USDA at 21.5 million tonnes, virtually the same level as the previous year. India, the largest producer, was projected to have a crop of 7.3 million tonnes, 400,000 less than a year earlier, because of below-normal rainfall. China's offtake was expected to be 5.8 million tonnes, up 8 percent, as the government increased the producer price. Among the other large producers, Indonesia's crop was projected to reach 880,000 tonnes, slightly above a year earlier, while Senegal's was expected to decline by 9 percent to 670,000 tonnes.

The 1990/91 world peanut crush was estimated by USDA at 11.5 million tonnes, down 2 percent from the previous season. India is the major processor, followed by China. World peanut meal production was expected to be 4.7 million tonnes, 2 percent less than a year earlier, and peanut oil output was forecast at 3.2 million tonnes, also down 2 percent.

With a smaller crop, world trade in peanuts declined. Global peanut exports were expected to fall by over 8 percent to 1.1 million tonnes. The leading exporters were China, the U.S., and Argentina.

World peanut meal exports were projected to decline by almost 9 percent to 765,000 tonnes. India was the largest exporter, and its shipments were expected to reach 350,000 tonnes, followed by Senegal. The chief importers were the European Community (EC), Thailand, and Poland.

Global peanut oil exports were forecast to be almost 220,000 tonnes, down about 4 percent, with Senegal the major seller, followed by Argentina. India does not export peanut oil, as the domestic market absorbs all production. Other large oil consumers were China, the EC, Burma, and the U.S.

World ending stocks of peanuts in 1990/91 were projected to be almost 440,000 tonnes, 18 percent below the previous season. Peanut meal inventories were expected to be over 45,000 tonnes, the same as a year earlier, and peanut oil stocks were forecast to be 44,000 tonnes, down about 12 percent.

The 1990/91 U.S. peanut crop was expected to be 3.36 billion pounds, down by 6 percent, as yields fell. Planted area rose by 100,000 acres to 1.77 million, and harvested acreage was 1.75 million. The average yield dropped by over 20 percent to 1,920 pounds per acre, because of dry weather in some areas. The major producing state was Georgia with a crop of 1.26 billion pounds, down 32 percent. The Texas crop was nearly 500 million pounds, 3 percent more than the previous year. Other large producers were North Carolina and Alabama. Carry-in stocks of peanuts were 600 million pounds, putting total supplies at almost 4 billion pounds.

The 1990/91 crush was expected to be just below 580 million pounds, down from a year earlier. Peanut oil production was estimated at almost 180 million pounds, off 8 percent, while peanut meal output was projected to be 109,000 tonnes.

The U.S. is a major exporter of peanuts, and its leading customer is the EC. Most of those exports are unprocessed, shelled peanuts. The U.S. exports a small amount of peanut oil, mostly to Canada and Hong Kong. The U.S. is a minor exporter of peanut meal.

Domestic food use of peanuts increased again, as it does virtually every year, and was estimated at 2.4 billion pounds, up 2 percent. A number of popular consumer products are made from edible, shelled peanuts, including peanut butter, salted peanuts, and peanut candy. Part of the increase in peanut butter consumption stems from government-assisted, child nutrition programs. The U.S. is also an exporter of peanut butter.

With the smaller crop, ending stocks of peanuts were expected to remain fairly tight.

U.S. Government Program

The USDA indicated that the 1990 peanut crop would have a poundage quota of 3.12 billion pounds. For quota peanuts, the price-support level was $631.47 per short ton, below $615.87 in 1989.

World Production of Peanuts (in the Shell) In Thousands of Metric Tons

Crop Year	Argentina	Brazil	Burma	China (mainland)	India	Indonesia	Mali	Nigeria	South Africa	Senegal	Sudan	Taiwan	Thailand	United States	Zaire (Congo)	World Total
1979–0	337	545	337	2,822	5,768	783	116	377	348	673	852	86	109	1,800	313	17,429
1980–1	243	310	431	3,600	5,005	791	92	530	309	521	707	82	129	1,045	320	16,271
1981–2	270	305	564	3,826	7,223	728	92	428	116	878	740	83	147	1,806	347	19,832
1982–3	250	250	541	3,916	5,282	795	80	396	89	1,109	497	63	145	1,560	357	17,435
1983–4	329	220	532	3,951	7,086	747	50	591	72	568	413	87	147	1,495	367	18,738
1984–5	270	337	667	4,815	6,436	755	45	500	196	560	390	89	172	1,998	375	19,683
1985–6	439	216	560	6,664	5,120	780	90	400	111	587	275	77	172	1,870	375	19,990
1986–7	518	195	544	5,882	5,875	750	90	400	235	817	350	83	169	1,677	380	20,383
1987–8	450	170	519	6,170	5,854	786	100	475	204	932	435	100	162	1,640	380	20,863
1988–9[1]	243	140	438	5,693	9,000	840	115	350	230	690	450	95	170	1,806	380	23,243
1989–90[2]	370	130	410	5,360	7,700	875	90	450	230	738	400	100	162	1,810	380	21,633
1990–1[2]	429	150	450	5,800	7,300	880			240	670	400			1,524		21,544

[1] Preliminary. [2] Estimated. *Source: Foreign Agricultural Service, U.S.D.A.* T.474

Salient Statistics of Peanuts in the United States

Crop Year	Acreage Planted (1,000 Acres)	Acreage Harvested For Nuts (1,000 Acres)	Average Yield Per Acre In Lbs.	Production Picked and Threshed 1,000 Lbs.	Season Farm Price ¢ Lb.	Farm Value Million Dollars	Thousand Pounds (Yr. Beg. Aug.) Exports Unshelled	Exports Shelled	Imports Unshelled	Imports Shelled
1976–7	1,549	1,518	2,464	3,739,190	20.0	746,675	24,765	580,496	432	66
1977–8	1,545	1,512	2,456	3,715,055	21.0	780,869	64,284	705,032	413	148
1978–9	1,541	1,509	2,619	3,952,384	21.1	833,885	94,612	783,236	413	139
1979–0	1,546	1,520	2,611	3,968,485	20.6	819,276	64,810	745,828	424	140
1980–1	1,521	1,400	1,645	2,302,762	25.1	578,635	33,071	353,683	3,597	300,710
1981–2	1,514	1,489	2,675	3,981,850	26.9	1,069,526	77,998	374,812	6	4,632
1982–3	1,311	1,277	2,693	3,440,255	25.1	862,686	51,321	473,416	844	1,323
1983–4	1,411	1,374	2,399	3,295,530	24.7	814,579	39,509	529,949	298	1,715
1984–5	1,563	1,531	2,878	4,405,745	27.9	1,230,720	72,907	592,333	79	2,167
1985–6	1,490	1,467	2,810	4,122,787	24.3	1,003,412	83,747	721,690	1,493	1,942
1986–7	1,573	1,537	2,407	3,700,745	29.2	1,074,487	75,687	441,954	328	1,598
1987–8	1,567	1,546	2,341	3,619,440	28.0	1,021,900	76,346	407,557	880	1,069
1988–9[1]	1,657	1,628	2,445	3,980,917	27.9	1,115,200				
1989–90[1]	1,665	1,645	2,426	3,989,995	27.9	1,123,500				
1990–1[2]	1,770	1,753	1,917	3,359,300	34.0	1,142,100				

[1] Preliminary. [2] Estimate. *Source: Economic Research Service, U.S.D.A.*

T.475

Peanuts Supply & Disposition (Farmers' Stock Basis) & Support Program in the United States

Crop Year Begin. Aug. 1	Supply (Million Pounds) Production[3]	Supply Imports	Supply Stocks Aug. 1	Supply Total	Disposition Exports & Shipments	Disposition Crushed for Oil	Disposition Seed, Loss & Residual	Food Use Military	Food Use Civilian	Total Disappear.	Government Support Program Support Price ¢ per lb.	Additional ¢ per lb.	Amount Put under Support Quantity Mil. Lbs.	Amount Put under Support % of Prod.	Owned by CCC July 31 Mi. Lbs.
1977–8	3,715	1	608	4,324	1,025	487	556	—	1,675	3,743	21.50		535	14.4	2
1978–9	3,952	1	581	4,534	1,141	527	521	—	1,759	3,948	21.00	12.5	515	12.9	—
1979–0	3,968	1	586	4,555	1,057	571	522	—	1,777	3,927	21.00	15.0	709	17.9	—
1980–1	2,303	401	628	3,332	503	446	505	—	1,465	2,919	22.75	12.5	337	14.6	—
1981–2	3,982	2	413	4,397	576	573	795	—	1,696	3,640	22.75	12.5	835	20.9	2
1982–3	3,440	2	757	4,199	681	342	463	—	1,849	3,335	27.50	10.0	539	15.7	—
1983–4	3,296	2	864	4,162	744	387	564	—	1,856	3,551	27.50	9.3	367	11.1	—
1984–5	4,406	2	611	5,019	860	625	199	—	1,911	3,595	27.50	9.3	1,370	30.9	—
1985–6	4,123	2	1,424	5,549	1,043	812	826	—	2,023	4,704	27.95	7.4	1,359	33.0	—
1986–7	3,701	2	845	4,544	663	514	291	—	2,073	3,541	30.37	7.5	290	7.8	—
1987–8	3,620	2	1,003	4,621	618	560	539	—	2,071	3,788	30.37	7.5	700	19.3	—
1988–9	3,981	2	833	4,816	688	814	330	—	2,254	3,986	30.76	7.5	540	13.6	—
1989–90[1]	3,990	2	843	4,835	989	624	216	—	2,312	4,141	30.79	7.5			
1990–1[2]	3,359	2	694	4,055	450	575	266	—	2,315	3,605	31.57	7.5			

[1] Preliminary. [2] Estimate. [3] Production is on a net weight basis. *Source: Economic Research Service, U.S.D.A.*

T.476

U.S. Production of Peanuts (Harvested for Nuts) by States In Millions of Pounds

Crop Year	Alabama	Arkansas	Florida	Georgia	Louisiana	Mississippi	New Mexico	No. Car.	Oklahoma	So. Car.	Tennessee	Texas	Virginia	U.S. Total
1977	589.1	—	170.5	1,499.1	—	11.6	25.4	444.1	267.6	31.2	—	394.5	293.0	3,715
1978	551.8	—	182.1	1,725.3	—	13.1	24.1	465.4	207.0	35.7	—	436.5	311.6	3,952
1979	584.9	—	179.9	1,704.8	—	12.4	25.3	378.5	264.0	32.3	—	533.0	253.5	3,968
1980	265.0	—	143.0	994.6	—	7.5	22.4	291.3	140.2	14.3	—	293.3	129.8	2,303
1981	602.7	—	178.0	1,655.5	—	12.7	24.9	555.6	189.3	39.0	—	393.3	330.8	3,982
1982	522.2	—	153.0	1,517.5	—	—	25.2	417.2	174.6	30.0	—	325.1	275.5	3,440
1983	454.5	—	166.8	1,568.0	—	—	25.6	318.3	176.5	25.0	—	362.3	198.6	3,296
1984	648.6	—	246.4	2,160.0	—	—	32.2	449.5	189.0	39.2	—	371.3	269.7	4,406
1985	590.0	—	216.0	1,921.3	—	—	32.0	452.0	171.0	34.2	—	422.6	283.7	4,123
1986	494.9	—	233.2	1,632.6	—	—	28.7	440.4	184.5	25.5	—	385.0	275.9	3,701
1987	465.3	—	215.8	1,575.0	—	—	33.5	392.2	222.8	31.2	—	441.0	243.0	3,619
1988	561.7	—	228.6	1,801.6	—	—	30.6	420.0	225.0	32.1	—	417.5	263.9	3,981
1989	537.8	—	214.9	1,849.5	—	—	43.7	370.1	210.7	32.5	—	484.7	246.2	3,990
1990[1]	375.0	—	193.2	1,258.0	—	—	52.0	440.1	243.0	29.7	—	499.5	268.8	3,359

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.*

T.477

PEANUTS AND PEANUT OIL

U.S. Peanut Oil Utilization by Uses In Millions of Pounds

Yr. Begin Oct. 1	Baking or Frying Fats	Total Edible	Yr Begin Oct. 1	Baking or Frying Fats	Total Edible
1982–3	162	174	1986–7		151
1983–4	120	131	1987–8		181
1984–5		118	1988–9[1]		175
1985–6		137	1989–90[1]		105

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.*

Supply and Reported Uses of Shelled Peanuts and Products in the U.S. In Millions of Pounds

Year Begin. Aug. 1	Shelled Peanuts (All Grades)						Reported Used (Shelled Peanuts—Raw Basis)								
	Stocks Aug. 1		Production				Edible Grades Used in							Oil Stock Crushed For Oil, Cake & Meal	Appar. Disapp. (Cleaned in Shell)
							Peanut								
	Edible	Oil Stock	Edible	Oil Stock	Imports	Exports	Candy	Salted	Sandwich Spread	Butter[5]	Other Products	Total	Roasting Stocks		
1977–8	372.5	29.8	1,882	468.8	.1	720.9	235.2	274.2	28.2	623.8	18.7	1,180	126.7	366.2	190.6
1978–9	359.0	37.4	1,944	436.0	.1	783.2	268.4	291.6	28.1	664.9	19.1	1,272	116.7	396.0	210.9
1979–0	348.0	46.4	2,003	487.0	.1	745.8	258.4	284.9	30.3	700.0	19.3	1,293	137.1	429.1	201.4
1980–1	371.7	29.5	493.3	286.9	300.7	353.7	237.9	205.5	24.1	588.6	19.7	1,076	90.8	335.5	120.3
1981–2	268.3	10.4	2,088	387.8	4.6	374.8	255.9	278.0	22.7	653.7	15.3	1,225	122.7	431.5	200.7
1982–3	450.4	20.6	1,887	283.1	1.3	473.4	284.2	308.1	21.9	677.6	17.0	1,309	155.9	256.4	206.4
1983–4	537.9	19.2	1,776	342.5	1.7	529.9	298.1	302.0	24.3	671.4	15.5	1,311	133.8	291.1	173.0
1984–5	402.4	33.1	2,415	422.0	2.2	592.3	290.3	309.1	26.2	697.1	19.2	1,342	139.1	470.3	211.9
1985–6	860.5	30.4	2,238	496.9	1.9	721.7	313.8	358.5	24.6	701.3	23.5	1,422	152.3	610.9	234.6
1986–7	559.3	4.7	2,123	299.7	1.6	442.0	321.2	384.3	33.9	679.4	41.1	1,460	139.4	386.4	215.1
1987–8[1]	683.6	21.3	2,015	301.4	1.1	407.6	325.6	373.8	45.8	701.4	37.8	1,484	111.5	421.2	187.9
1988–9[1]	565.8	22.6					326.9	381.5	— 860.3 —		36.0	1,605			
1989–90[1]							330.2	392.8	— 897.3 —		36.7	1,657			

[1] Preliminary. [2] Includes in transit, exports and domestic use, except for oil stock for which disappearance is assumed to equal crushings. [3] Graded & ungraded oil stock only. [4] Relates to peanut oil mills only. [5] Peanuts used in peanut butter by mfrs. for own use in candy is included under peanut candy. *Source: Statistical Reporting Service, U.S.D.A.* T.481

World Peanut Oil Salient Statistics In Thousands of Metric Tons

Crop Year	Production				Imports		Exports				Consumption					Ending Stocks Total
	Burma	China	India	Total	EC–12	Total	Argentina	China	Senegal	Total	Burma	China	EC–12	India	Total	
1983–4	136	490	1,608	2,926	279	343	30	49	92	295	136	441	254	1,608	2,970	46
1984–5	171	632	1,520	3,028	244	313	28	40	42	274	171	592	227	1,520	3,085	31
1985–6	143	871	1,221	2,956	238	300	33	80	81	330	143	794	212	1,221	2,887	70
1986–7	139	754	1,360	3,101	260	328	77	80	100	356	139	679	233	1,360	3,082	61
1987–8	133	805	1,363	3,099	293	359	44	30	125	306	133	776	270	1,363	3,170	43
1988–9	94	748	2,080	3,679	265	320	21	8	90	211	94	743	221	2,080	3,769	62
1989–90[1]	90	696	1,790	3,328	233	293	28	5	105	225	90	695	211	1,790	3,408	50
1990–1[2]	97	764	1,650	3,249	230	305	35	5	92	217	97	779	205	1,650	3,343	44

[1] Preliminary. [2] Forecast. *Source: Foreign Agricultural Service, U.S.D.A.* T.482

Production, Consumption, Stocks and Foreign Trade of Peanut Oil in the U.S. In Millions of Pounds

Crop Yr. Begin. Oct.	Production		Consumption		Stocks—Sept. 30		Imports for Consumption	Exports	
	Crude	Refined	In Refining	In End pdt's.	Crude	Refined		Crude	Refined
1977	252.0	249.7	257.2	243.9	91.5	7.6	—	71.8	9.7
1978	145.2	171.9	178.0	169.0	7.3	4.7	—	32.9	7.6
1979	183.0	130.1	134.3	120.4	22.6	7.3		14.4	1.2
1980	182.4	170.6	166.7	165.3	7.5	4.3		46.0	1.6
1981	141.6	122.8	133.5	115.3	12.9	5.2		38.1	2.7
1982–3[1]	N.A.	168.8	183.9	174.0	N.A.	3.9	3.8	4.5	.5
1983–4	N.A.	139.6	148.4	132.9	17.9	4.0	1.9	5.1	.4
1984–5	138.2	119.9	124.6	N.A.	9.6	4.8	.9	33.4	1.5
1985–6	N.A.	139.7	145.7	N.A.	64.9	4.0	.5	78.0	—
1986–7	144.2	160.0	169.0	153.2	17.0	3.6	2.4	5.5	.8
1987–8[2]	144.6	199.6	207.5	179.3	10.9	3.8	2.2	4.7	2.0
1988–9[2]	N.A.	185.5	192.4	N.A.	18.6	4.4		—— 12.6 ——	

[1] Data prior to 1982–83 are for the calendar years. [2] Preliminary. *Source: Bureau of Census* T.483

Average Price Received by Producers in U.S. for Peanuts in the Shell In Cents Per Pound

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average[1]
1978–9	21.2	20.8	21.4	21.0	20.8	21.2	—	—	—	—	—	—	21.1
1979–0	—	21.4	20.3	20.4	20.4	20.4	—	—	—	—	—	—	20.6
1980–1	—	22.5	23.2	27.9	37.3	47.7	—	—	—	—	—	—	25.2
1981–2	25.7	28.9	26.7	25.1	25.8	24.9	—	—	—	—	—	—	26.8
1982–3	27.1	25.1	24.9	25.3	26.1	22.9	—	—	—	—	—	—	25.0
1983–4	—	25.2	24.3	24.5	26.0	27.8	—	—	—	—	—	—	24.6
1984–5	—	29.9	27.1	25.6	26.3	—	—	—	—	—	—	—	27.9
1985–6	24.7	24.4	24.3	24.6	23.3	20.6	—	—	—	—	—	—	24.4
1986–7	29.6	27.0	28.8	29.8	32.5	24.5	—	—	—	—	—	—	29.2
1987–8	29.7	29.2	27.9	27.4	27.6	28.5	—	—	—	—	—	—	28.0
1988–9	20.0	29.9	28.0	26.4	25.8	27.8	—	—	—	—	—	—	27.9
1989–90[2]	28.4	28.2	27.7	26.9	28.2	24.6	—	—	—	—	—	—	27.8
1990–1[2]	26.5	32.2	34.0	40.1	43.6	44.8							34.1
1991–2													

[1] Weighted average by sales. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.479

Crude Peanut Oil Produced[2] in the United States In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1979	11.7	14.2	22.5	18.6	23.0	15.5	8.2	10.8	4.5	4.5	6.1	7.7	183.0
1980	6.2	15.1	16.7	25.9	30.7	22.9	23.5	21.2	5.9	2.1	6.3	5.9	182.4
1981	6.1	6.0	10.5	17.3	19.1	19.5	13.6	9.8	5.3	9.7	12.0	12.7	141.6
1982	11.3	11.1	19.4	26.3	22.3	19.0	15.0	11.8	N.A.	N.A.	N.A.	N.A.	N.A.
1983	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1984	12.1	13.3	10.8	12.5	10.1	8.9	5.1	5.3	4.3	9.9	8.6	7.3	108.2
1985	9.8	13.9	15.8	15.5	14.5	12.4	10.4	10.0	10.1	9.2	10.2	14.9	146.7
1986	19.2	21.1	19.9	20.8	24.0	26.4	14.2	9.6	N.A.	4.1	11.9	10.7	181.9
1987	9.8	13.6	20.5	11.6	17.8	15.8	14.5	9.7	4.2	7.5	13.7	13.1	151.8
1988	13.8	14.9	10.1	8.3	19.5	12.5	17.0	11.4	2.8	9.7	17.0	18.4	155.4
1989	10.5	20.8	27.8	24.3	19.0	33.4	26.6	22.4	N.A.	7.4	11.6	9.8	213.6
1990[1]	11.1	15.8	14.2	22.2	24.9	24.1	14.0	8.5	2.1	14.4	12.5	15.9	179.7
1991													

[1] Preliminary. [2] Not seasonally adjusted. *Source: Statistical Reporting Service, U.S.D.A.* T.473

Average Price of Domestic Crude Peanut Oil (in Tanks) F.O.B. Southeast Mills In Cents Per Pound

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Average
1979–0	34.4	31.1	29.5	25.9	25.8	22.9	20.5	22.4	23.1	26.9	33.2	36.0	27.6
1980–1	35.8	48.7	49.1	47.7	39.3	34.1	34.0	37.1	38.0	38.1	43.2	40.3	40.5
1981–2	34.5	34.5	30.9	27.3	31.4	23.3	29.1	29.9	26.2	24.7	22.7	22.5	28.1
1982–3	22.9	25.2	26.1	25.6	25.7	24.1	25.1	26.4	26.4	26.7	30.7	50.5	28.0
1983–4	50.7	48.8	48.1	47.3	46.5	48.4	52.6	58.2	59.1	57.7	54.8	39.2	47.3
1984–5	36.7	41.2	41.4	39.2	38.8	40.3	49.6	46.2	40.7	39.7	37.6	33.9	40.4
1985–6	38.3	42.2	36.1	29.5	22.6	21.5	24.4	27.6	28.0	27.5	30.5	28.3	29.7
1986–7	27.80	29.80	26.50	25.10	25.00	23.75	24.00	26.15	25.68	25.27	24.61	26.74	25.87
1987–8	33.48	31.50	32.10	35.73	32.40	29.61	29.50	30.02	34.00	39.80	37.86	36.00	33.50
1988–89	42.50	36.75	34.25	26.50	25.09	29.98	32.39	36.25	39.80	—	35.75	34.40	33.97
1989–90	39.06	41.50	41.60	43.25	46.00	43.40	41.25	45.25	46.90	46.88	49.05	51.13	44.61
1990–1	48.13	44.20											

Source: Agricultural Marketing Service, U.S.D.A. T.485

Pepper

In the late 1980s and into 1990, pepper prices pulled back from the very high levels reached in 1986/87. Those high prices led producers to increase the acreage cultivated to pepper. This new acreage has taken about three years to come into production, so some of the effects of the expansion will be seen in 1990/91.

The latest year for which supply data were available was 1989. World pepper production fell, as output in India and Brazil declined. Output in Brazil, one of the largest producers, dropped by 15 percent in 1989, due to weather problems, poor productivity in mature pepper areas, and high production costs. Because of the long period between planting and production and the large initial investment required for pepper, competing crops are often more attractive to farmers. Despite the economic uncertainty which plagues Brazilian agriculture, replanting of acreage is expected to boost pepper production in 1990.

In India, 1989 production fell by about 30 percent from the record 1988 level, due to a delay in rainfall and disease problems. Because of a larger monsoon, higher production was expected in 1990.

Indonesia, a major producer of white and black pepper, has moved ahead of India to become the largest producer. In 1989, Indonesia increased its output by over 5 percent, enabling it to capture a larger share of the export market. More acreage has been cultivated on the island of Bankga.

Malaysia is another large producer, and in 1989 its output rose by 25 percent and was expected to increase further in 1990. Virtually all of Malaysia's pepper acreage is located on the island of Borneo.

Together, Brazil, India, Indonesia, and Malaysia account for about 90 percent of world pepper production. Other major producers are Thailand, Madagascar, and Sri Lanka. Worldwide production in 1989 was nearly 170,000 tonnes, almost 10 percent less than 1988's very large output. World output was expected to increase through 1991, because of better crops in India and Brazil.

Pepper exports in 1989 fell, possibly due to the high prices of 1987/1988. The major exporter has become Indonesia, because of India's reduced export availability. The major markets for Indonesian pepper are the U.S. and Japan, followed by the Netherlands, West Germany, Hungary and the USSR. India is an important exporter with markets in the USSR and Eastern Europe. Much of Malaysia's exports go to Singapore for reexport. Brazil ships mostly to the U.S. and Europe. The major pepper importers are the U.S., USSR, West Germany and Japan.

World Exports of Pepper (Black & White) and Prices

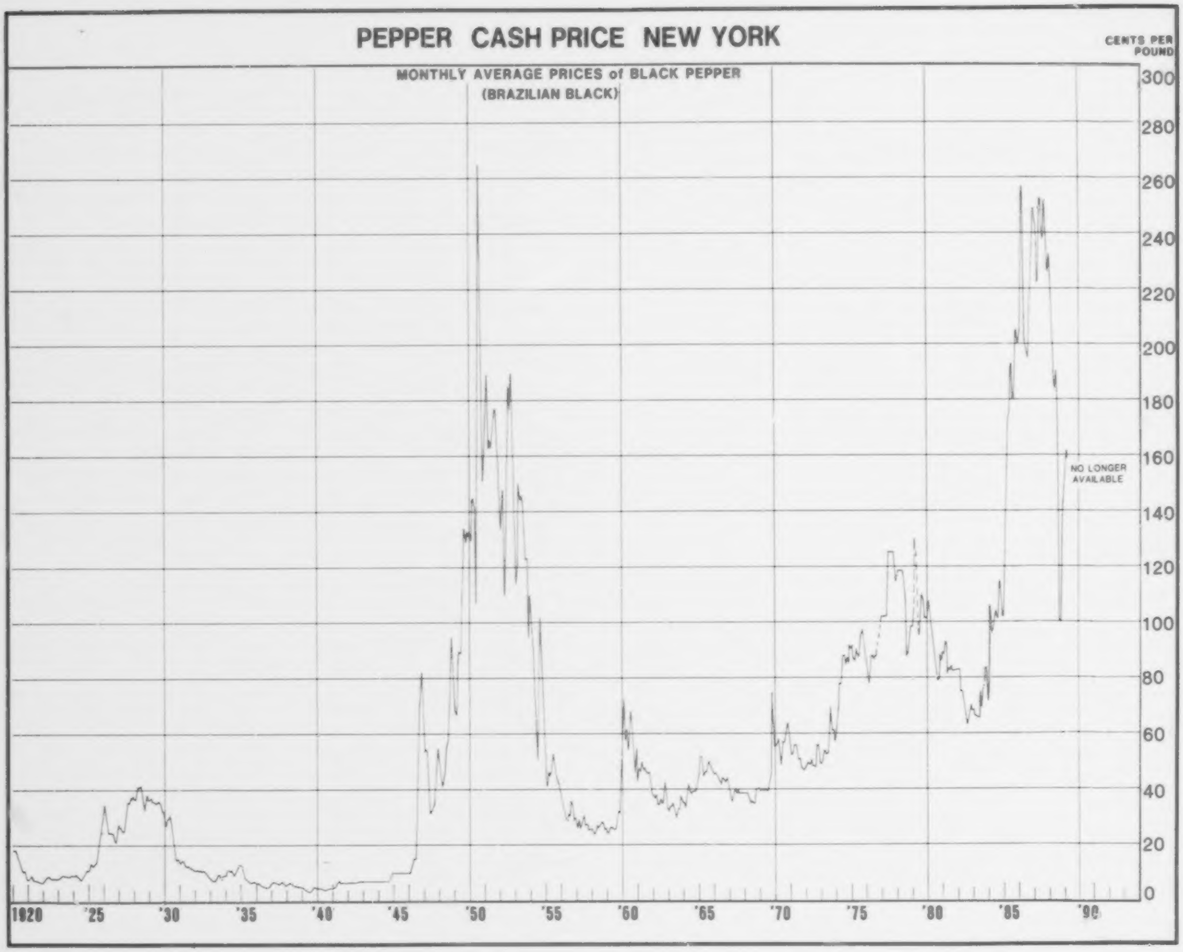
	Exports (metric tons)							New York Spot Prices (¢ per pound)					
								Indonesian		Brazilian		Indian	
Year	Brazil	India	Indonesia	Thailand	Madagascar	Malaysia	Sri Lanka	Lampong Black	Muntok White	Black	White	Malabar Black	Tellicherry[2]
1979	25,186	20,545	24,986		1,894	36,118	876	93.7	132.6	91.9	129.7	93.9	112.2
1980	31,964	26,795	29,345		1,674	30,709	945	87.6	120.9	83.3	116.3	87.6	102.5
1981	46,895	18,636	33,996		1,440	28,696	2,042	68.8	101.5	62.3	100.0	80.4	103.8
1982	44,539	20,454	36,327		1,796	25,010	1,238	66.3	84.8	62.1	84.7	69.2	83.7
1983	30,363	27,982	45,061		2,802	23,481	1,120	72.1	96.7	65.5	96.2	76.0	86.5
1984	36,499	28,381	33,817		2,097	16,502	2,202	98.6	153.9	96.5	152.8	98.9	115.2
1985	24,676	19,538	26,202		2,002	19,070	1,260	169.6	190.6	167.4	190.4	169.6	185.3
1986	22,069	49,807	29,566	1,816	1,842	15,366	1,287	215.0	275.3	212.5	275.3	214.6	235.1
1987[1]	25,500	32,252	29,995	1,477	1,825	13,859	2,015	237.1	267.7	235.9	267.7	236.0	262.8
1988[1]	23,550	47,258	41,512	841	2,566	18,827	2,692	173.9	243.4	170.3		170.3	220.6
1989[1]	23,000	25,223	41,000	1,000	2,600	25,000	2,700						

[1] Preliminary. [2] Extra. *Source: Foreign Agricultural Service, U.S.D.A.* T.486

United States Imports of Unground Pepper from Specified Countries In Metric Tons

	Black Pepper										White Pepper						
Year	Brazil	Mexico	Sri Lanka (Ceylon)	Spain	India	Indonesia	Malaysia	Singapore	China	Total	Brazil	China	W. Germany	Indonesia	Malaysia	Singapore	Total
1979	9,704		281	—	627	10,898	2,644	156	61	24,482	414	10	—	2,159	51	94	2,756
1980	10,075	131	3,194														
1981	14,716	75	2,503														
1982	14,887	10	172	—	848	11,620	172	63	3	27,811	423	1	5	2,194	—	95	2,721
1983	13,047	—	256	—	2,498	12,327	25	120	3	28,346	571	17	6	2,460	—	65	3,130
1984	10,369	3	158	34	4,024	9,814	131	322	378	27,421	246	260	10	3,805	100	100	4,762
1985	12,227	3	158	34	4,024	9,814	131	322	378	27,421	246	260	10	3,805	100	100	4,762
1986	9,416	7	255	1	20,976	5,980	634	120	243	38,063	134	171	7	2,846	65	140	3,578
1987	11,981	23	388	—	9,341	6,958	1,667	379	107	31,372	65	6	1	4,238	22	110	4,533
1988[1]	6,033	119	344	—	7,481	11,131	1,400	104	14	26,939	20	2	25	4,169	12	26	4,326

[1] Preliminary. *Source: Foreign Agricultural Service, U.S.D.A.* T.487



PEPPER CASH PRICE NEW YORK

Average Black Pepper Prices in New York In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1974	64.0	70.0	78.0	78.0	85.0	88.0	88.0	85.0	87.5	85.5	92.0	91.0	82.7
1975	91.5	87.0	86.0	90.0	89.0	87.5	88.5	95.0	97.0	94.0	87.5	85.0	89.8
1976	81.0	79.0	77.5	88.0	88.0	87.0	87.5	87.5	N.A.	N.A.	N.A.	102.0	86.4
1977	102.0	102.0	102.0	102.0	125.0	125.0	125.0	125.0	125.0	125.0	114.5	N.A.	115.7
1978	118.5	118.5	118.5	118.5	117.5	109.0	107.5	88.0	88.5	95.5	98.5	98.5	106.4
1979	105.0	N.A.	130.0	N.A.	N.A.	95.0	97.0	110.0	108.0	108.0	102.0	101.3	106.3
1980	108.0	101.0	96.3	93.0	87.0	84.3	82.8	79.0	79.0	88.0	86.5	89.3	89.5
1981	88.5	93.3	92.0	81.0	83.0	82.3	84.0	82.5	82.3	82.3	82.5	82.5	84.7
1982	82.5	82.5	75.0	75.0	70.0	69.0	67.0	63.0	69.0	70.5	68.5	68.3	71.7
1983	68.3	66.5	66.3	65.5	65.5	65.5	75.0	69.3	76.3	77.3	83.5	83.5	71.9
1984	105.7	102.0	95.7	97.0	100.7	102.0	103.7	101.3	109.0	115.3	107.3	102.3	103.5
1985	114.0	124.3	145.0	173.3	175.7	190.7	192.7	180.0	180.0	193.0	205.0	200.0	172.8
1986[1]	197.6	210.5	250.0	206.0	188.2	193.8	193.8	190.8	204.8	226.0	232.0	246.2	212.5
1987	241.4	231.0	218.8	232.5	245.2	241.8	232.6	232.5	251.5	241.4	238.5	233.8	235.9
1988	233.3	228.8	210.5	190.3	184.3	190.5	182.8	141.5	100.2	99.5	138.2	143.0	170.3
1989	156.8	161.8	159.0	——— no longer quoted ———								110–115	

[1] Brazilian black since 1986. *Source: Bureau of Labor Statistics (0289–0131); N.Y. Wall St. Journal; CRB; Foreign Agricultural Service, U.S.D.A.* T.488

Petroleum

Refiners attempting to rebuild heating oil inventories bid up available crude supplies in January 1990, following the fourth coldest December on record. That helped absorb OPEC output that was well in excess of OPEC's official ceiling of 22.1 million barrels per day (bpd) and the perceived demand of 22.5 million bpd.

The U.S. refiner acquisition cost of crude oil in January averaged $20.64/bbl. ($20.75 for domestic oil and $20.51 for imported), the highest since January 1986, when it was $25.64.

However, January 1990 was the warmest on record in the U.S., and it was followed by a mild February and a softening economy that curtailed industrial demand for energy. Many consumers were left with high-priced inventories of heating oil, just when it was time for refiners to start stockpiling gasoline for the summer. Faced with poor margins on the products, refiners delayed building gasoline inventories to avoid further increases in heating oil stocks.

Meanwhile, OPEC was having its usual problems enforcing member production quotas. Demand for OPEC oil was estimated at 21 million bpd, but the cartel's production was more than 23.5 million bpd. At an emergency meeting in May, the thirteen OPEC nations agreed to cut production by 1.445 million bpd. But even that production level, which was not adhered to, was too much for the market to absorb.

OPEC was believed to have the capacity to pump some 30 million bpd. Much of the excess capacity is in Saudi Arabia. But the leading quota buster during the spring of 1990 was believed to be the United Arab Emirates. As spring progressed, crude prices retreated. The average landed cost of crude in the U.S. bottomed at $14.93/bbl. in June. In July, Iraq pressured Kuwait and its other neighbors to cut output, and massed troops on Kuwait's border. On August 2, Iraq invaded Kuwait and shortly thereafter annexed the emirate.

The U.N. embargoed trade with Iraq in August, banning the sale of crude and petroleum products from both Iraq and Kuwait. Fears of shortages sent prices sharply higher, as twenty-eight nations sent troops to Saudi Arabia to enforce the embargo and to prepare to force Iraq out of Kuwait. Crude set an all-time high of $40.40/bbl., basis West Texas Intermediate, on October 9. However, by then Saudi Arabia and others had increased output to replace the 20 percent of OPEC oil taken off the market by the embargo. Also, the combination of higher prices and recessions already under way in the U.S., Canada and the U.K. had reduced petroleum demand.

The International Energy Agency (IEA) estimated that world free-market oil consumption fell by 700,000 bpd in the fourth quarter to 53.7 million bpd. Because of sluggishness in OECD economies and the effects of higher prices on developing nations that import oil, free-market oil consumption was expected to fall to 52.9 million bpd from the 1990 average of 53 million.

According to the IEA, OPEC production was back at an estimated 23.5 million bpd in December 1990, which pushed global fourth-quarter petroleum output to 53.9 million bpd. Because of hoarding, global inventories increased an estimated 200,000 bpd in the fourth quarter, instead of falling in line with the seasonal increase in heating oil demand.

The total amount of oil stored in OECD countries on January 1, 1991, was put at 3.28 billion barrels, equal to 96 days of OECD consumption and the highest level since 1982. Additionally, some 100 million barrels of unsold oil were believed to be stored in tankers at sea, including large quantities of Iranian, Saudi and Venezuelan crudes.

Futures Markets

Futures contracts on crude oil, heating oil, and unleaded regular gasoline are actively traded on the New York Mercantile Exchange, as are options on those contracts. Heating oil is traded on London's International Petroleum Exchange, where it is called gas oil. Brent crude oil futures and options on gas oil are also traded in London.

World Production of Crude Petroleum, by Specified Countries In Thousand Barrels Per Day

Year	Algeria	Canada	China	Libya	Iran	Iraq	Kuwait	Nigeria	Mexico	Indonesia	United Kingdom	USSR	Saudi Arabia	United States	Venezuela	World Total
1980	1,106	1,435	2,114	1,787	1,662	2,514	1,656	2,055	1,936	1,577	1,622	11,460	9,900	8,597	2,168	59,353
1981	1,002	1,285	2,012	1,140	1,380	1,000	1,125	1,433	2,313	1,605	1,811	11,552	9,815	8,572	2,102	55,778
1982	987	1,271	2,045	1,150	2,214	1,012	823	1,295	2,748	1,339	2,065	11,615	6,483	8,649	1,895	53,184
1983	968	1,356	2,120	1,105	2,440	1,005	1,064	1,241	2,689	1,343	2,291	11,684	5,086	8,688	1,801	52,967
1984	1,014	1,438	2,296	1,087	2,174	1,209	1,157	1,388	2,780	1,412	2,480	11,576	4,663	8,879	1,798	54,203
1985	1,037	1,471	2,505	1,059	2,250	1,433	1,023	1,495	2,745	1,325	2,530	11,250	3,388	8,971	1,677	53,646
1986	945	1,474	2,620	1,034	2,035	1,690	1,419	1,467	2,435	1,390	2,539	11,540	4,870	8,680	1,787	55,872
1987	1,048	1,535	2,690	972	2,298	2,079	1,585	1,341	2,548	1,343	2,406	11,690	4,265	8,349	1,752	56,306
1988	1,040	1,610	2,728	1,055	2,259	2,646	1,492	1,450	2,512	1,328	2,232	11,679	5,288	8,140	1,903	58,464
1989[2]	1,100	1,560	2,760	1,096	2,863	2,822	1,802	1,689	2,507	1,374	1,787	11,360	5,148	7,613	1,883	47,364
1990[1]	1,160	1,531	2,761	1,281	3,032	2,790	1,722	1,775	2,497	1,348	1,834	10,999	5,658	7,300	2,052	47,740

[1] Estimate. [2] Preliminary. *Source: Energy Information Administration* T.489

United States Production of Gasoline[1] (Includes Aviation) In Millions of Barrels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	191.8	165.7	186.5	183.4	196.7	203.5	210.7	200.1	196.5	194.9	188.9	203.2	2,322
1983	188.7	164.3	183.7	186.7	199.0	200.6	208.8	203.7	199.3	192.7	199.7	196.1	2,323
1984	187.7	184.1	197.6	196.4	207.0	199.6	200.9	199.5	196.2	198.7	202.1	201.4	2,371
1985	184.2	166.2	189.0	191.1	204.3	204.2	211.5	212.3	189.8	197.8	195.2	206.7	2,352
1986	202.8	177.3	188.6	195.8	220.9	214.1	216.8	221.2	208.7	206.0	207.5	216.5	2,476
1987	208.9	178.8	204.2	206.0	217.5	213.7	219.2	215.9	208.6	207.5	207.7	218.1	2,506
1988	209.3	195.8	208.9	207.9	213.3	210.3	222.9	224.5	209.3	213.4	212.4	227.2	2,555
1989[2]	215.6	186.7	205.7	205.2	215.8	219.2	229.0	222.8	213.0	213.0	212.1	213.9	2,551
1990[2]	214.0	196.0	205.6	203.6	205.4	213.4	224.9	227.8	218.3				

[1] Gasoline and naphtha from crude petroleum and natural gasoline used at refineries. [2] Preliminary. *Source: Bureau of Mines* T.502

United States Domestic Consumption of Gasoline In Millions of Barrels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	185.5	174.0	201.2	207.7	207.1	206.1	211.4	206.1	196.9	198.8	197.6	203.6	2,396
1983	187.8	168.9	212.5	194.4	205.8	210.8	210.7	216.0	202.8	205.2	198.8	212.9	2,427
1984	194.6	181.4	202.8	201.1	214.7	214.1	212.5	220.9	198.3	209.2	204.7	203.7	2,458
1985	197.5	185.0	207.4	209.6	219.7	210.8	218.3	225.6	199.8	214.6	203.7	211.4	2,503
1986	202.2	181.7	216.5	214.1	221.4	217.3	231.6	231.7	207.8	225.6	207.1	222.1	2,579
1987	203.2	190.9	216.7	220.2	232.2	227.1	235.9	228.4	216.9	227.2	215.1	225.3	2,639
1988	208.2	204.8	227.8	223.6	227.4	235.5	233.0	235.1	223.0	226.2	222.0	228.3	2,695
1989[1]	209.4	199.1	230.8	215.4	230.7	234.2	227.1	240.5	218.0	227.0	221.4	230.3	2,684
1990[1]	207.5	200.3	227.8	214.2	227.3	225.3	230.8	241.8	207.7				

[1] Preliminary. *Source: Bureau of Mines* T.503

Stocks of Finished Gasoline[2] on Hand in the United States, at End of Month In Millions of Barrels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1982	215.9	211.2	200.7	181.0	175.6	179.5	185.0	187.6	193.3	194.6	191.9	196.8
1983	210.0	209.2	185.4	185.4	188.0	185.4	192.3	187.4	191.8	189.5	198.4	187.8
1984	188.0	199.3	204.8	209.7	212.7	206.5	202.2	188.3	196.5	195.5	201.2	207.9
1985	200.9	191.8	188.2	184.2	183.4	188.5	194.4	190.4	189.7	182.3	185.6	192.4
1986	203.2	207.8	186.2	176.0	189.8	197.8	192.0	189.7	198.5	187.0	193.0	196.4
1987	213.0	209.0	207.2	202.9	197.7	194.5	190.8	190.0	193.4	184.1	190.2	191.1
1988	203.1	205.1	196.4	192.1	190.8	176.7	181.2	185.4	184.6	182.3	185.8	192.0
1989[1]	207.8	205.7	191.1	190.6	185.8	180.1	192.1	183.8	187.5	184.8	187.1	179.1
1990[1]	197.6	203.3	187.9	186.3	180.3	177.7	182.0	175.4	190.5			

[1] Preliminary. [2] Includes aviation. *Source: Bureau of Mines* T.504

United States Crude Oil[1] Supply & Disposition

	Supply								Disposition		Ending Stocks[2]		
	Field Production		Imports			Stock Withdrawal[3]		Unaccounted for Crude Oil					
Yearly Average	Total Domestic	Alaskan	Total	SPR[4]	Other	SPR[4]	Other		Refinery Inputs	Exports	Total	SPR[5]	Other Primary
	Thousands barrels PER DAY										Million barrels		
1984	8,879	1,722	3,426	197	3,229	195	4	185	12,044	181	796	451	345
1985	8,971	1,825	3,201	118	3,083	117	67	145	12,002	204	814	493	321
1986	8,680	1,867	4,178	48	4,130	50	28	139	12,716	154	843	512	331
1987	8,349	1,962	4,674	73	4,601	80	49	145	12,854	151	890	541	349
1988	8,140	2,017	5,107	51	5,055	52	- 51	196	13,246	155	890	560	330
1989	7,613	1,874	5,843	56	5,787	56	30	200	13,401	142	921	580	341
1990[6] Sept.	7,167	1,702	5,656	0	5,656	—	-884	480	14,105	68	933	590	343
Oct.	7,454	1,885	5,132	0	5,132	-8	109	460	12,825	104	936	589	346
Nov.	7,308	1,746	5,062	0	5,062	-111	-252	372	12,955	138	925	586	339
Dec.	7,375	1,831	5,104	0	5,104	-35	-470	-272	12,792	89	916	586	331

[1] Includes lease condensate. [2] Stocks are totals as of end of period. [3] A negative number indicates an increase in stocks and a positive number indicates a decrease. [4] Strategic Petroleum Reserve. [5] Stocks of Alaskan crude oil in transit were included beginning in January 1981. Stock withdrawals are calculated using new basis levels. [6] Preliminary. *Source: Energy Information Administration* T.489a

PETROLEUM

Crude Petroleum Refinery Operations Ratio[1] In Percent of Capacity

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1982	67	65	66	66	69	75	75	71	74	71	71	70	70
1983	68	65	66	70	72	75	75	74	78	73	75	70	72
1984	73	76	75	75	77	77	76	78	78	76	77	76	76
1985	74	74	74	76	78	79	81	78	77	79	80	81	78
1986	81	78	76	82	86	86	84	87	86	83	84	84	83
1987	82	80	79	81	82	85	87	87	86	83	82	84	83
1988	83	81	83	84	86	86	86	87	84	83	84	85	84
1989[2]	86	83	84	84	86	90	89	89	88	86	86	84	86
1990[2]	88	88	84	85	87	89	93	91	91				

[1] Based on the ratio of the daily avg. crude runs to stills to the rated capacity of refineries per day. [2] Preliminary. *Source: Bureau of Mines*

T.496

Production of Major Refined Petroleum Products in Continental U.S. In Millions of Barrels

Year	Asphalt[2]	Aviation Gasol.	Fuel Oil Distillate	Fuel Oil Residual	Gasoline[4]	Jet Fuel	Kerosene	Natural Gas Plant Liquids	Lubricants	Liquefied Gases[3] Total	Liquefied Gases[3] at L.P.G.[5]	Liquefied Gases[3] at L.R.G.[6]
1983	135.7	9.2	896.5	310.9	2,323	373.2	40.0	588.2	53.8	599.2	479.6	119.6
1984	141.3	9.1	981.2	326.2	2,371	414.3	41.8	613.1	58.3	620.9	488.2	132.7
1985	146.3	9.3	980.9	322.0	2,352	433.9	34.5	607.5	53.1	622.0	479.3	142.6
1986	149.7	11.7	1,021.2	324.3	2,476	472.0	32.6	587.1	58.2	618.5	466.2	152.3
1987	158.4	9.1	996.6	323.2	2,506	490.1	28.7	605.6	60.9	638.2	474.5	163.7
1988	162.1	9.3	1,046.3	338.7	2,555	501.3	28.8	614.2	62.3	665.2	482.6	182.6
1989[1]	154.9	9.2	1,058.0	348.1	2,5[illegible]	512.1	26.9	586.1	61.4	653.5	451.3	202.2

[1] Preliminary. [2] 5.5 barrels = 1 short ton. [3] Includes ethane & ethylene. [4] Finished (includes aviation). [5] Gas processing plants. [6] Refineries. *Source: Bureau of Mines*

T.490

Stocks of Petroleum & Products in the United States on January 1 In Millions of Barrels

Year	Crude Petroleum	Strategic Reserve	Refined Products Total	Asphalt[2]	Aviation Gasol.	Fuel Oil Distillate	Fuel Oil Residual	Finished Gasoline[6]	Jet Fuel	Kerosene	Liquefied Gases[3]	Lubricants	Motor Gasoline Total	Motor Gasoline Finished	Unfinished Oils (Net)[5]
1983	643.6	293.8	628.3	15.9	2.3	178.6	66.2	196.8	36.8	10.4	94.0	12.5			158.1
1984	722.9	379.1	569.2	18.8	2.3	140.3	48.5	187.8	38.6	7.9	100.6	12.1	222	186	161.5
1985	795.9	450.5	620.6	17.2	2.7	161.1	53.0	207.9	42.0	11.9	100.8	12.7	243	205	139.8
1986	814.2	493.3	556.6	21.2	2.1	143.7	50.4	192.4	40.5	7.5	73.5	11.8	223	190	148.0
1987	842.8	511.6	609.4	17.7	2.2	155.1	47.4	196.4	49.7	8.4	102.7	14.2	233	194	140.4
1988	889.6	540.6	579.5	18.8	2.3	134.5	47.4	191.1	49.9	8.4	97.1	13.3	226	189	138.3
1989	889.9	559.5	561.6	20.8	2.1	123.5	44.6	192.0	43.8	7.3	97.3	13.3	228	190	145.8
1990[1]	921.1	579.9	508.3	20.6	2.1	105.7	43.8	179.1	40.9	5.1	80.2	13.8	213	177	152.0
1991[4]	916	586				130	49				109		221	182	

[1] Preliminary. [2] 5.5 bbls. = 1 s. ton. [3] Includes ethane & ethylene at plants & refineries. [4] Estimate. [5] And misc. products. [6] Includes aviation. *Source: Bureau of Mines*

T.493

Stocks of Crude Petroleum[1] in the United States at Beginning of Month In Millions of Barrels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	643.6	660.4	669.4	666.8	678.9	679.4	683.0	675.8	700.5	707.7	716.2	712.7
1984	722.9	733.1	727.4	728.2	742.5	763.5	766.6	771.8	764.1	756.3	779.8	786.9
1985	795.9	793.5	781.6	791.2	806.8	828.6	820.6	810.5	805.6	806.6	803.6	812.4
1986	814.2	826.1	827.1	837.8	836.6	828.5	828.4	845.2	837.7	844.2	851.4	848.6
1987	842.8	847.9	848.6	852.4	850.9	849.8	854.8	853.8	864.4	871.1	891.5	902.2
1988	889.6	888.3	892.2	898.9	904.6	907.6	908.9	900.8	885.7	883.2	895.6	895.7
1989[2]	889.9	894.8	896.6	892.5	907.4	915.7	903.0	907.6	916.3	912.0	914.3	930.5
1990[2]	921.1	932.9	924.0	955.9	953.1	968.7	970.9	966.2	959.2	932.7		

[1] Total gasoline-bearing in the U.S. [2] Preliminary. *Source: Bureau of Mines*

T.501

U.S. Production of Residual Fuel Oil In Millions of Barrels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1985	31.1	29.1	29.8	27.4	24.6	21.0	22.7	23.0	24.2	28.3	28.0	32.7	322.0
1986	29.1	24.0	25.2	28.0	28.3	24.6	26.3	27.8	25.6	25.6	29.2	30.6	324.3
1987	28.5	23.1	26.7	24.9	25.2	25.9	27.9	27.3	27.1	27.5	27.8	31.0	323.2
1988	31.1	28.8	29.4	28.8	26.7	26.4	28.1	26.9	25.5	26.4	27.5	33.1	338.7
1989[1]	29.4	26.0	29.0	27.1	28.9	28.5	26.6	27.9	25.6	31.0	32.3	35.3	348.1
1990[1]	35.0	29.7	30.2	26.4	27.2	27.8	30.6	29.3	27.3				

[1] Preliminary. *Source: Bureau of Mines* T.505

Production[1] of Crude Petroleum in the United States In Millions of Barrels of 42 Gallons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	263.8	243.7	268.7	257.7	269.2	259.4	268.4	267.6	261.0	269.7	260.9	266.5	3,157
1983	269.6	245.2	269.7	263.3	267.6	260.0	267.7	269.1	263.5	271.9	263.1	260.3	3,171
1984	274.9	257.4	268.8	265.9	277.6	265.6	275.4	273.1	269.8	276.1	269.4	275.8	3,250
1985	270.9	252.7	281.9	271.3	283.1	270.7	277.4	272.9	268.6	278.1	267.1	279.9	3,275
1986	283.2	256.9	279.4	265.9	274.0	258.7	268.4	259.6	249.8	261.0	252.4	258.9	3,168
1987	262.9	234.9	262.4	254.9	258.4	248.4	255.8	254.5	246.2	259.3	251.9	257.8	3,047
1988	255.7	242.8	259.6	248.6	255.1	245.1	249.2	250.5	236.8	248.7	240.7	246.2	2,979
1989[2]	245.3	219.2	235.9	232.4	242.0	228.7	230.8	233.9	226.4	231.0	226.1	227.4	2,779
1990[2]	233.2	209.0	229.2	219.9	225.0	212.3	221.5	223.7	215.0				

[1] Represents oil transported from producing properties, plus that remaining on properties & consumed on leases. [2] Preliminary.
Source: Bureau of Mines T.500

U.S. Foreign Trade[3] of Petroleum and Products In Millions of Barrels (42 gallons)

	Exports		Imports					Exports		Imports			
Year	Crude Oil	Refined Products	Crude & Unfin. Oils	Refined Products	Distillate Fuel Oil	Residual Fuel Oil	Year	Crude Oil	Refined Products	Crude & Unfin. Oils	Refined Products	Distillate Fuel Oil	Residual Fuel Oil
1981	83.2	133.9	1,654.2	534.2	63.1	292.1	1986	56.2	229.3	1,642.7	628.0	90.3	244.2
1982	86.3	211.2	1,352.4	514.0	34.0	283.1	1987	55.0	223.0	1,837.3	599.4	93.2	206.1
1983	59.9	209.9	1,317.8	525.9	63.5	255.2	1988	56.7	241.0	2,021.6	686.8	110.4	235.9
1984	66.2	196.9	1,368.8	620.2	99.4	249.2	1989[1]	51.7	259.5	2,283.7	656.2	111.7	229.6
1985	74.5	209.9	1,308.6	540.3	73.1	186.3	1990[2]	40.0	250.0	2,385	630.0	107.0	194.0

[1] Preliminary. [2] Estimate. [3] Includes shipments to & from noncontiguous territories. *Source: Energy Information Administration* T.???

Domestic First Purchase Price of Crude Petroleum at Wells[1] In Dollars per Barrel

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	25.93	26.06	26.05	25.93	26.00	26.09	26.11	26.02	25.97	25.92	25.44	25.05	25.88
1985	24.26	23.64	23.89	24.19	24.18	24.07	24.04	23.99	23.96	24.10	24.27	24.51	24.09
1986	23.12	17.65	12.62	10.68	10.75	10.68	9.25	9.77	11.09	11.00	11.05	11.73	12.51
1987	13.79	14.51	14.54	14.95	15.29	15.95	16.88	17.06	16.25	15.95	15.46	14.27	15.40
1988	13.64	13.43	12.96	13.92	14.12	13.59	12.38	12.22	11.63	10.62	10.31	11.99	12.58
1989[2]	13.80	14.24	15.65	17.04	16.76	16.42	16.32	15.01	15.58	16.25	16.30	17.01	15.86
1990[2]	18.50	18.18	16.58	14.52	13.82	12.79	14.02	21.85	28.44	30.86			

[1] Buyers posted prices. [2] Preliminary. *Source: Bureau of Labor Statistics Energy Inform. Administration* T.497

Volume of Trading of Crude Oil Futures in New York In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	108.7	130.7	121.5	106.2	136.4	134.5	154.9	200.4	111.2	243.3	174.7	217.7	1,840.3
1985	385.3	263.3	298.5	272.6	290.1	342.2	329.8	269.7	339.8	365.9	337.9	386.8	3,980.9
1986	520.1	490.9	560.0	691.4	677.0	612.7	860.5	701.6	666.7	986.4	604.4	941.8	8,313.5
1987	873.2	968.4	1,199	1,059	937.3	1,196	1,412	1,505	1,126	1,205	1,287	1,813	14,582
1988	1,626	1,336	1,809	1,352	1,205	1,507	1,754	1,219	1,956	2,040	1,609	1,450	18,859
1989	1,919	1,524	2,053	2,070	1,911	2,082	1,663	1,343	1,541	1,521	1,425	1,483	20,535
1990	2,164	1,790	1,794	1,813	1,945	1,839	2,046	2,716	2,073	2,437	1,769	1,302	23,687
1991	1,997												

Source: N.Y. Mercantile Exchange T.502c

Average Open Interest of Crude Oil Futures in New York In Contracts

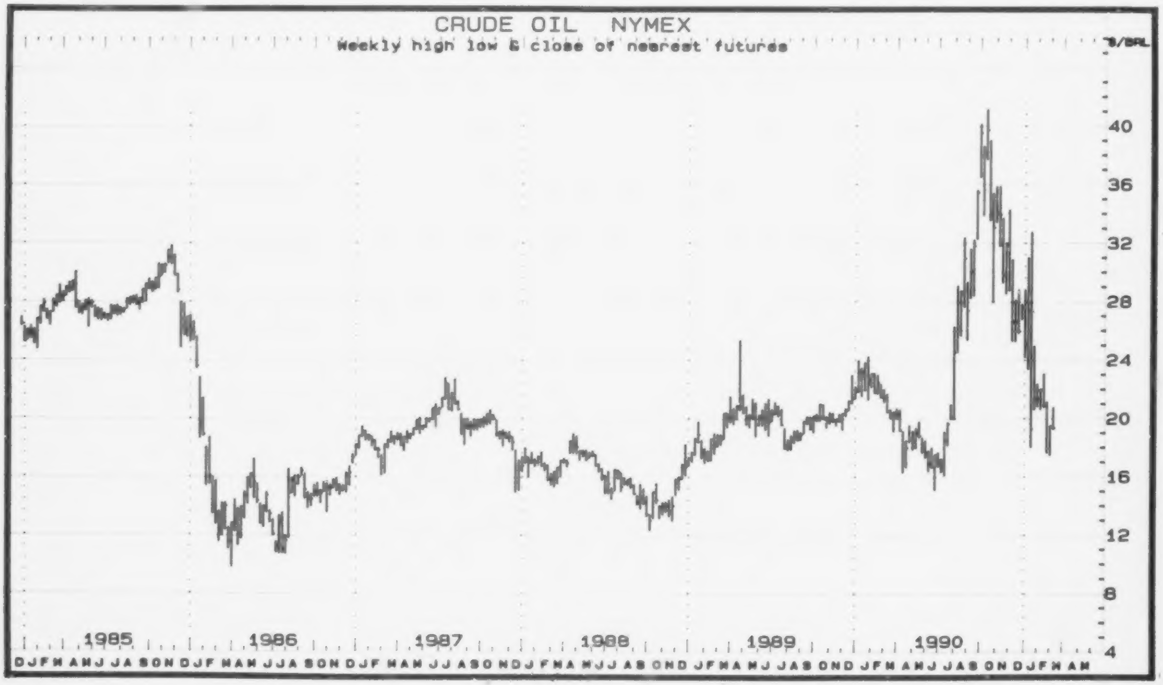
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1986	69,614	66,811	73,167	88,203	100,012	103,300	122,760	113,286	104,874	117,423	113,077	113,250
1987	127,129	144,569	160,668	155,686	143,305	147,501	177,760	195,468	197,623	183,276	165,489	199,806
1988	202,830	200,813	210,878	192,074	177,155	180,019	177,978	177,879	220,973	221,628	196,454	196,109
1989	204,066	210,299	224,322	248,032	231,390	222,748	221,389	209,702	230,990	235,716	242,677	257,974
1990	273,193	300,069	287,013	287,538	278,600	285,384	275,771	262,746	266,313	269,167	242,500	232,405
1991	249,759											

Source: N.Y. Mercantile Exchange T.502b

High, Low & Closing Prices of December Crude Oil Futures in New York In Dollars Per Barrel

Year of Delivery		Year Prior to Delivery			Delivery Year											Life of Delivery Range
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	
1987	High	—	—	—	18.15	18.10	18.08	18.14	18.94	20.31	21.39	21.65	19.59	20.52	19.83	21.65
	Low	—	—	—	16.68	16.40	16.42	17.33	17.79	18.75	19.99	18.10	18.54	19.30	18.05	16.40
	Close	—	—	—	18.03	16.58	17.97	17.77	18.80	20.05	20.71	19.43	19.48	19.96	18.93	—
1988	High	—	18.15	18.00	16.90	16.72	16.78	18.35	18.07	18.00	16.80	16.57	15.28	14.96	14.38	18.35
	Low	—	17.94	14.99	15.55	15.40	15.13	16.31	16.80	15.65	15.00	15.21	13.00	12.13	13.23	12.13
	Close	—	17.94	15.97	16.14	15.55	16.65	17.71	17.91	15.68	16.64	15.23	13.02	13.58	13.60	—
1989	High	—	15.15	15.85	17.75	16.56	18.50	18.71	17.95	18.62	19.05	18.69	19.88	20.67	20.38	20.67
	Low	—	12.70	14.84	15.66	15.52	16.51	16.78	16.98	16.88	17.85	17.50	18.52	19.32	19.47	12.70
	Close	—	15.05	15.36	15.78	16.44	17.44	17.80	17.63	18.31	18.11	18.62	19.87	19.94	20.07	—
1990	High	18.85	18.85	19.70	20.50	21.50	21.08	21.20	20.51	20.05	21.99	30.06	38.50	39.90	35.85	39.90
	Low	18.32	18.02	18.56	18.60	19.75	20.10	18.92	19.75	18.55	18.20	21.84	27.22	28.30	28.50	17.65
	Close	18.47	18.49	19.60	19.96	20.98	20.76	20.21	19.93	18.81	21.91	26.57	38.31	35.23	31.50	—
1991	High	27.45	25.80	24.04	23.00											
	Low	21.25	23.05	21.05	18.37											
	Close	25.51	23.19	23.09	18.72											

Source: N.Y. Mercantile Exchange T.502a



Plastics

Plastics made up the largest category of materials used in the U.S. in 1990, continuing to displace metals, glass, paper, wood and others. New technologies have developed plastics with high-temperature resistance, high strength-to-weight ratios, and chemical/corrosive resistance. The value of shipments by the plastics industry rose by 1 percent in 1990 to $33.3 billion.

Packaging continued to be the largest user of plastics, followed by the transportation, electronics, construction, medical equipment, and sporting goods industries. The use of plastics by the food-service industry, particularly fast food chains, has come under attack by environmentalists. As a result, several fast food chains switched from plastic foam containers and coffee cups to paper goods. However, those paper goods often are coated with a plastic compound. Also, according to some studies, most paper cups actually produce more pollution during their manufacture and disposal than do plastic cups.

The switch by one chain from plastic to paper cut short a styrene recycling project. Meanwhile, other plastics producers and consumers stepped up recycling in 1990. One plant that went into operation in York, Pennsylvania, in September was designed to process more than 20 million pounds of high-density polyethylene (HDPE) a year, equal to about 150 million plastic milk jugs. The recycled HDPE was to be used in detergent bottles; a similar facility was recycling HDPE into bottles for motor oil. The plant was also expected to recycle PET (polyethylene terephthalate) and plastic film.

About 10 percent of the PET used in the U.S. in 1987 was recycled, according to the Environmental Protection Agency, mainly because of deposit bottle laws. PET is used for soft drink bottles.

Recycling of other consumer plastics, such as PVC and styrene, has been negligible. However, supplies of recycled plastic resins were expected to increase by more than 47 percent in 1991 and by over 20 percent annually in 1992 and 1993.

Plastic resins accounted for a significant share of the chemical industry's net export surplus in 1990. Plastic resin exports rose by 2 percent to $5.7 billion for a net trade surplus of $4.1 billion.

The U.S. plastics industry was expected to retain its technological lead through the 1990s, particularly in engineering plastics.

World Production of Plastics and Resins[3] (Condensation, Polymerization, Etc.) In Thous. of Metric Tons

Year	Australia	Austria	Czecho-slovakia	France	Germany East	Germany West	Italy	Japan	Netherlands	Poland	Belgium	Hungary	USSR	United Kingdom	United States
1976	407	404	580	1,769	679	7,088	2,266	4,952	1,723	559	824	186	3,216	2,556	13,261
1977	480	430	738	1,834	734	6,270	2,538	4,978	1,783	583	1,471	144	3,300	2,710	11,232
1978	522	434	810	1,885	762	6,703	2,466	5,882	1,962	596	1,682	209	3,516	2,621	12,380
1979	618	437	853	2,220	779	7,255	2,562	6,964	2,012	571	1,969	289	3,504	2,647	13,866
1980	709	487	894	2,052	859	6,710	2,464	6,422	1,975	667	1,835	324	3,636	2,260	12,418
1981	700	504	913	2,480	998	6,600	2,154	5,936	2,393	588	1,940	307	3,696	2,051	13,664
1982	715	454	961		989	6,275	2,142	5,986	2,502	600	2,023	322	4,057	1,966	13,009
1983	776	550	1,004	2,650	1,045	7,031	2,436	6,504	2,777	526	2,246	337	4,392	1,800	14,790
1984		613	1,034	2,694	1,056	7,409	2,718	7,424	2,641	600	2,374	377	4,500	1,900	15,505
1985[1]		606	1,100	2,756	1,048	7,553	2,640	7,301	2,500	604	2,498	382	4,700	1,800	15,762
1986[2]		590	1,140	3,050	1,045	7,841	2,662	7,334		631	2,770	415	5,500	1,850	16,730

[1] Preliminary. [2] Estimate. [3] Refers to production of thermoplastic & thermosetting resins & plastic materials obtained by chemical transformation of natural organic substances or by chemical synthesis. *Source: United Nations* T.506

Production of Important Synthetic Plastics & Resin Materials in the U.S. In Thousands of Metric Tons[3]

Year	Phenolic Resins	Polyetnlene & Copolymers	Poly-propylene	Polystyrene & Copolymers	Polyvinyl Chloride & Copolymers	Year	Phenolic Resins	Polyethlene & Copolymers	Poly-propylene	Polystyrene & Copolymers	Polyvinyl Chloride & Copolymers
1980	1,745	11,720	3,699	5,540	5,485	1986	823	7,250	2,838	3,211	3,304
1981	1,688	12,604	4,008	5,915	5,618	1987	770	7,881	3,165	3,757	3,782
1982	1,398	12,548	3,515	5,609	5,397	1988	765	8,480	3,292	4,166	3,896
1983	1,460	13,890	4,457	6,254	6,256	1989[1]	N.A.	7,702	3,005	N.A.	5,005
1984	1,656	14,621	5,216	6,857	6,828	1990[2]		8,100	3,600		4,200
1985[3]	777	6,948	2,565	3,279	3,025	1991					-

Note: Data included in the table does not cover all Plastics production. Various types of Plastics production of lesser importance are not included because statistics are not available on a consistent basis. Also, many individual firms do not make their production figures known. [1] Preliminary. [2] Estimate. [3] Data prior to 1985 are in millions of pounds. *Sources: U.S. Tariff Commission, Bureau of Census* T.507

PLASTICS

Average Producer Price Index of Plastic Materials in the United States (1982 = 100)[1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Plastic Resins and Materials (066)													
1982	286.1	297.3	285.5	286.0	283.2	282.1	280.9	282.2	281.6	281.6	281.4	281.4	284.1
1983	283.8	283.1	282.1	285.4	288.0	289.1	291.3	293.7	302.6	299.1	297.9	301.5	291.5
1984	305.2	305.0	306.2	307.8	310.6	311.1	310.6	310.3	311.8	309.4	309.0	306.2	308.6
1985	305.2	306.9	306.3	306.1	305.4	307.1	307.5	306.4	305.1	300.7	300.3	299.3	304.7
1986	300.9	302.4	301.8	296.6	295.6	295.2	296.7	294.4	290.1	292.9	295.0	290.3	296.0
1987[1]	102.6	102.4	103.2	106.3	107.0	109.7	112.8	113.1	114.2	116.8	117.4	117.7	110.3
1988	121.5	123.5	124.4	127.6	130.1	131.2	134.8	136.9	138.9	139.8	140.2	140.1	132.4
1989	140.3	141.1	140.6	140.7	139.8	138.0	135.3	127.7	126.1	124.7	123.7	123.3	133.4
1990	122.2	121.6	122.2	123.0	123.5	123.0	122.1	122.3	123.6	125.1			
Thermoplastic Resins (0662)													
1982	103.5	104.2	103.2	103.5	102.1	101.5	100.9	101.5	101.3	101.3	101.3	101.1	102.1
1983	102.4	102.1	101.5	103.4	104.7	105.2	106.3	107.3	111.6	109.6	108.8	110.6	106.1
1984	112.3	112.0	112.5	112.8	113.4	114.0	113.8	113.6	114.4	113.2	113.0	111.7	113.1
1985	111.1	112.0	111.7	111.5	111.3	111.9	111.9	111.4	110.6	108.3	108.1	107.8	110.6
1986	108.7	109.4	109.0	106.9	106.3	105.9	106.7	105.7	103.6	105.2	106.2	103.9	106.5
1987[2]	102.3	102.1	103.1	107.3	107.9	111.1	113.9	114.1	115.3	118.5	119.3	119.7	111.2
1988	124.4	126.7	127.8	131.1	133.7	134.9	139.0	141.2	143.5	144.3	144.4	144.2	136.3
1989	144.5	145.2	144.4	143.9	143.2	141.1	137.7	128.5	126.7	125.1	124.0	124.0	135.7
1990	122.9	121.9	122.5	123.5	124.1	123.4	122.4	122.5	124.1	125.8			
1991													
PE Resin, Low, Film & Sheeting (0662-0301)													
1982	207.5	208.1	209.7	224.5	202.1	197.2	184.3	185.3	184.2	183.9	184.7	184.7	196.4
1983	204.9	205.2	193.9	215.4	215.4	N.A.	236.2	236.2	237.8	251.6	250.9	250.9	227.1
1984	272.1	272.6	272.1	272.1	272.1	272.1	272.1	272.1	272.1	272.1	272.1	272.1	272.1
1985	272.1	272.1	272.1	272.1	272.1	272.1	272.1	272.1	272.1	206.8	206.8	206.8	255.8
1986	224.7	224.7	224.7	224.7	224.7	224.7	224.7	224.7	N.A.	224.0	222.5	224.5	224.4
1987[1]	112.3	113.1	110.5	113.9	114.6	121.5	123.9	127.8	127.9	131.9	138.8	140.7	123.1
1988	145.9	150.3	153.8	157.9	171.4	172.0	178.3	192.3	201.3	203.5	202.7	201.6	177.6
1989	202.0	206.6	206.0	204.0	200.8	195.3	191.9	151.5	150.3	150.9	152.3	153.0	180.4
1990	151.9	145.3	146.1	145.9	152.5	151.7	144.9	141.9	152.3	146.1			
Styrene Plastics Materials (0662–06)													
1987	96.0	96.1	101.3	108.3	110.0	116.8	119.6	115.4	117.6	116.6	119.5	119.7	111.4
1988	122.2	125.2	127.0	128.9	129.0	131.7	133.6	134.1	134.1	135.4	134.7	134.8	130.9
1989	135.3	136.3	134.4	135.8	135.1	133.1	124.6	119.5	119.0	116.8	114.2	114.4	126.5
1990	113.1	114.7	117.2	116.8	116.8	115.2	113.7	113.7	115.6	118.7			
1991													
Thermosetting Resins (0663)													
1982	108.0	107.9	108.1	108.1	108.0	108.6	108.7	108.8	108.9	108.8	108.9	109.2	108.4
1983	109.0	108.8	108.9	108.5	108.4	108.6	108.7	109.4	110.1	110.8	111.5	111.5	109.5
1984	112.2	112.7	113.1	113.3	116.1	114.6	114.4	114.6	114.5	114.4	114.2	114.2	114.0
1985	114.1	114.1	114.2	114.1	114.0	114.6	114.9	115.0	115.3	115.7	115.7	115.1	114.7
1986	114.9	115.0	115.1	113.7	113.5	114.0	114.0	113.4	113.3	112.7	112.8	112.7	113.8
1987[2]	101.5	101.4	101.9	102.2	103.6	105.5	110.6	111.1	111.8	111.8	111.3	111.0	107.0
1988	110.2	110.4	110.7	113.5	115.4	115.7	116.8	118.4	119.2	120.0	122.4	122.7	116.3
1989	122.4	124.0	124.9	127.9	126.6	126.5	126.8	127.5	126.9	126.6	125.9	123.8	125.8
1990	122.8	124.0	124.1	124.4	124.3	124.7	124.7	124.8	125.0	125.4			
Phenolic Molding Compounds (0663–0201)													
1982	254.2	254.2	254.2	254.2	254.6	254.6	254.6	254.5	254.5	254.5	254.5	254.5	254.4
1983	249.6	245.7	245.7	245.7	245.7	245.7	245.7	245.9	246.0	246.0	245.6	245.7	246.1
1984	245.6	245.8	246.3	252.1	259.5	260.2	259.4	259.4	259.7	259.6	259.2	259.2	255.5
1985	259.2	259.2	259.2	259.2	259.2	259.2	259.2	268.1	268.1	268.1	268.1	268.1	262.9
1986	267.3	267.3	267.3	259.2	252.4	252.4	252.4	252.4	252.4	252.4	252.4	252.4	256.7
1987[1]	100.8	99.2	99.2	101.1	112.0	112.1	112.1	114.8	114.8	114.8	114.8	114.8	109.2
1988	114.8	114.8	114.8	115.4	122.1	122.1	122.3	122.3	122.3	123.6	128.2	128.2	120.9
1989	128.7	132.6	132.4	132.2	132.2	132.2	132.2	132.2	132.2	132.0	128.9	128.9	131.4
1990	128.9	128.9	128.9	128.9	128.9	128.9	129.7	129.7	129.7	129.7			

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[1] Data prior to 1987 are for 1967 = 100. [2] Data prior to 1987 are for Dec. 1980 = 100. *Source: Bureau of Labor Statistics* T.508

Platinum-Group Metals

In 1990, world mine production of platinum outside the USSR was put at 3.09 million ounces by Johnson Matthey, up 215,000 ounces from 1989. Soviet sales, used as a proxy for output in the USSR, were projected at 580,000 ounces, up 30,000 from 1989. Soviet mining statistics remained state secrets. Mine production of palladium outside the USSR rose by 130,000 ounces to 1.715 million. Soviet palladium sales were expected to increase by 10,000 ounces to 1.660 million ounces.

Platinum-group metals (PGM) include platinum, palladium, iridium, osmium, rhodium, and ruthenium. Small amounts of PGM are recovered from copper refined in Utah and Texas. But the only U.S. PGM mine is the Stillwater Complex in Montana, 30 miles north of Yellowstone National Park. Unlike many South African mines, which have considerable amounts of byproduct copper and nickel, Stillwater is a pure PGM play. In July 1990, Stillwater began processing its concentrates in an on-site smelter. The concentrates, containing about 70 ounces of PGM per tonne, yield a smelter matte (what is left after the slag is removed from the smelted ore) containing roughly 700 ounces per tonne. The smelter matte then is shipped by air to a Belgian refinery for toll refining. The smelter has cut the time from mining the ore to finished metal to three months from five.

The Stillwater mine was expected to yield 53,000 ounces of platinum and 180,200 ounces of palladium in 1990, and about 250,000 ounces of PGM in 1991, according to its operator, Chevron Resources Company. It also produced between 1,200 and 1,300 ounces of rhodium in 1990, a bonus in light of that metal's explosive price surge from $1,700/oz. in December 1989 to more than $7,000 in July. By late December, rhodium prices had retreated to between $5,000 and $5,300/oz.

Rhodium's rally began when processing problems at a new refinery in Bophutatswana, a Bantu homeland in South Africa, reduced supplies of PGM to the market. Because rhodium is the last metal recovered during refining, its availability was restricted the most. The refinery was reported to be operating at capacity by mid-year. World mine production of rhodium, including Soviet sales, was projected to rise by 14 percent in 1990 to 373,000 ounces, while demand was expected to grow by 18 percent to 386,000 ounces, resulting in a drawdown of 13,000 ounces in dealer inventories.

Because of tougher emissions standards in the U.S., the amount of rhodium in the average converter could double from 0.006 ounce to 0.012 ounce by the 1993 U.S. model year. There is a tendency to standardize converters at the toughest standards the auto is expected to have to meet, simplifying assembly and inventory problems, so it is likely that the U.S. 1993 standards--if not the even tougher California standards--will become the de facto world standards, as new autos are introduced.

Several mine expansion and development programs that began in South Africa in 1986 became market factors in 1990, increasing South African output by 210,000 ounces to 2.83 million, according to Johnson Matthey. About 65 percent of the gain came from three mines that began production in 1989 and approached full capacity in 1990: Karee, Eastern Platinum and Barplats.

Estimated world free-market platinum demand rose by nearly 5 percent to 3.6 million ounces in 1990, despite continued erosion in investment demand, which was forecast to fall by 45,000 ounces to 115,000. In Japan, purchases of large bars (500 grams or more) dropped by 50 percent to 15,000 ounces from 30,000 in 1989. Japanese investors are usually big buyers whenever the yen price of platinum retreats. However, a weakening real estate market, a 39 percent decline in the Nikkei Index, and rising domestic interest rates curtailed Japanese investment interest in 1990.

Free-market palladium demand was estimated at 3.35 million ounces, virtually unchanged from 3.33 million in 1989. However, free-market supplies totaled a record 3.375 million ounces, a 4.2 percent gain over 1989 levels.

Cash palladium ended the year at $82.75/oz., down 39 percent from the previous year's close of $135.50. The production surplus was a minor factor in the weakness, which largely reflected the lack of followthrough results from the cold fusion experiments of 1989 and the effects of Iraq's invasion of Kuwait on most industrial metals. Having spent early 1990 in the neighborhood of $500 an ounce, platinum collapsed after the invasion, ending the year at $411.75.

Futures Markets

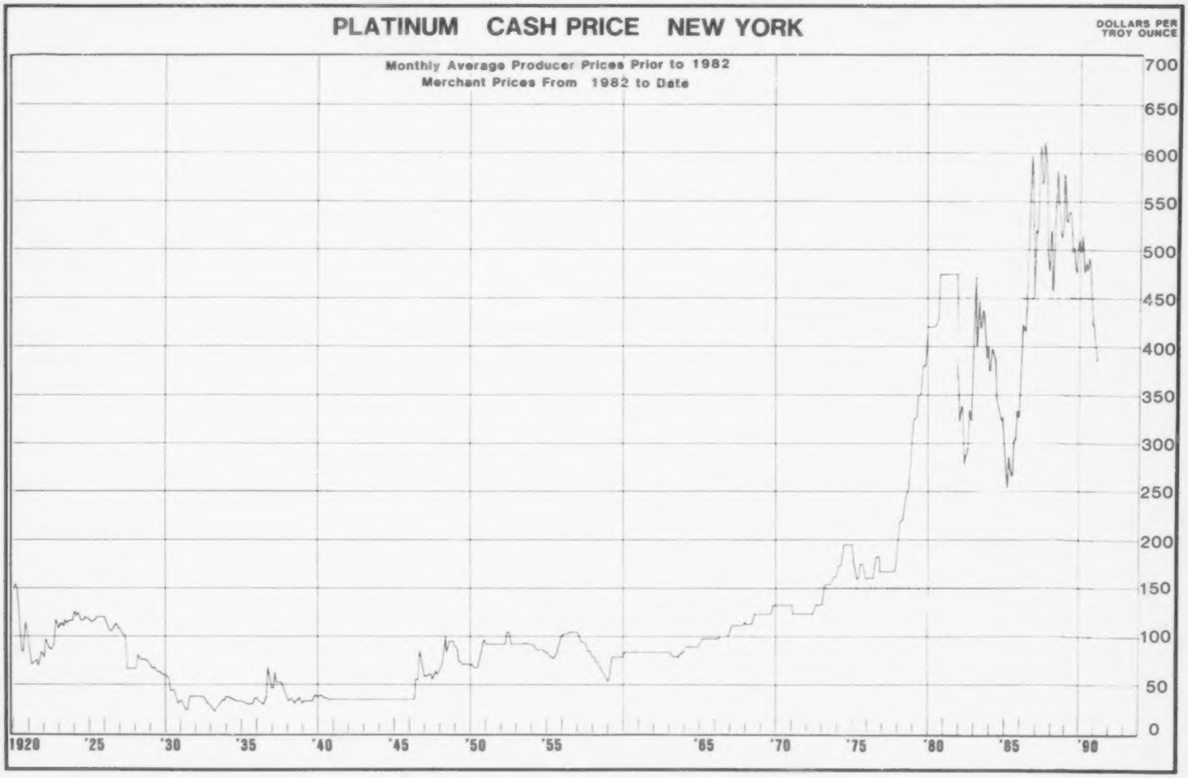
Platinum and palladium futures are traded on the New York Mercantile Exchange, which began trading options on platinum futures in October 1990. In June, the CFTC approved the delivery of Soviet platinum and palladium brands against NYMEX contracts. In Japan, platinum futures are traded on the Tokyo Commodity Exchange.

World Mine Production of Platinum-Group Metals In Kilograms (2.0246 lbs., Avoirdupois)

Year	Australia	Zimbabwe	Finland	Canada	Colombia[3]	Ethiopia[3]	Japan	South Africa	USSR	United States	Yugoslavia	World Total[1]
1988[2]	515	74	160	12,541	810	1	1,817	133,300	127,500	4,970	165	281,854
1989[2]	500	55	160	10,375	964	2	1,845	135,800	127,500	6,280	162	283,643
1990[1]				10,000				137,000	127,000	6,998		285,000

[1] Estimate. [2] Preliminary. [3] Placer platinum. *Source: Bureau of Mines* T.509

PLATINUM-GROUP METALS



Platinum-Group Metals Sold to Consuming Industries in the United States In Kilograms[4]

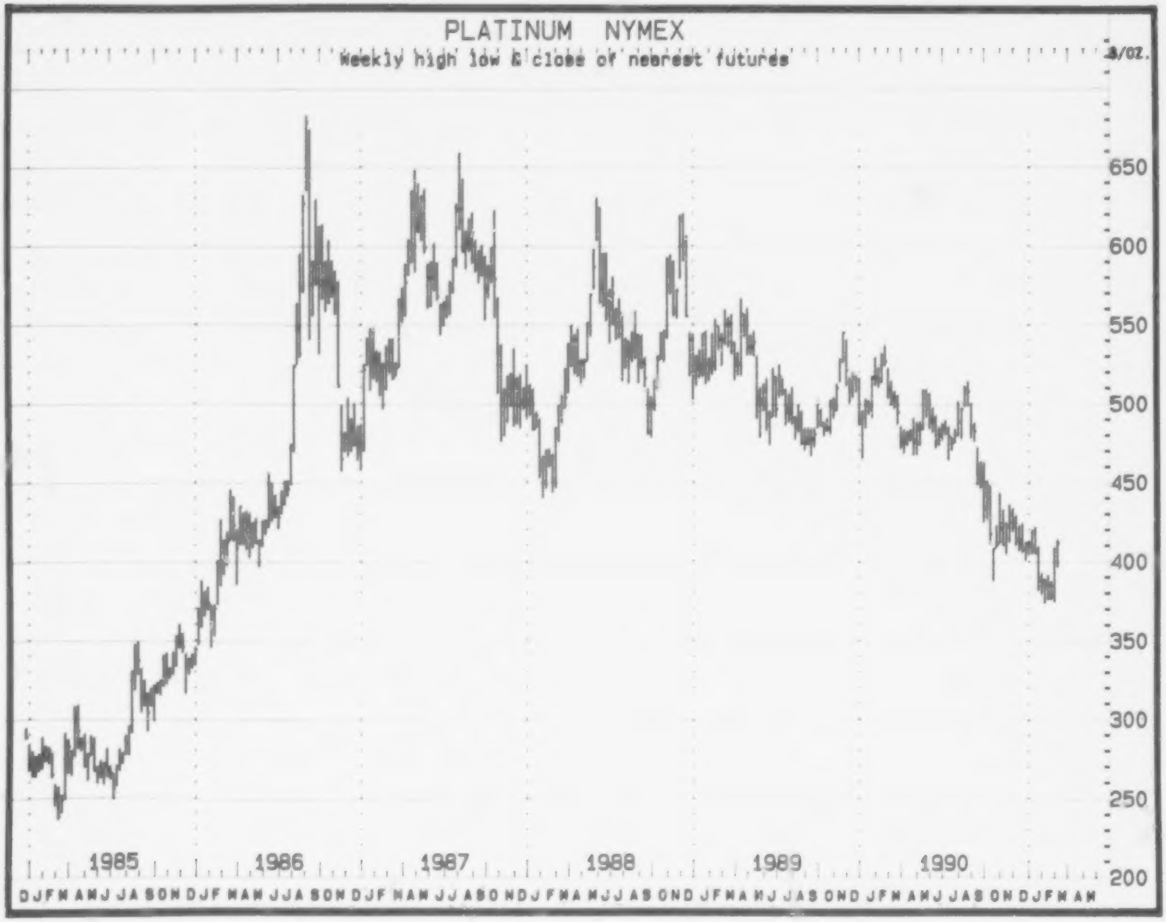
Year	Automotive Platinum	Automotive Others[2]	Chemical Platinum	Chemical Others[2]	Electrical Platinum	Electrical Others[2]	Dental & Medical Platinum	Dental & Medical Others[2]	Jewelry & Decorative Platinum	Jewelry & Decorative Others[2]	Petroleum Platinum	Petroleum Others[2]	All Platinum-Group Metals Platinum	All Platinum-Group Metals Palladium	All Platinum-Group Metals Other[2] Metals	All Platinum-Group Metals Total
1985	619.0	250.3	85.2	87.4	115.8	359.1	24.5	340.1	16.0	12.8	28.8	81.0	1,025.8	1,060.3	185.4	2,271.5
1986	625.0	232.6	77.7	75.4	103.5	356.3	20.8	268.9	11.3	9.8	30.6	61.0	981.0	889.9	209.4	2,080.3
1987	605.0	223.1	61.7	41.3	58.5	349.8	15.4	338.4	5.7	15.4	23.8	41.3	825.2	995.3	123.9	1,944.4
1988	19.3	7.2	3.2	4.5	3.5	14.4	.6	6.7	.4	.4	1.1	1.5	31.1	34.2	5.6	71.0
1989[1]	18.8	6.9	2.4	2.2	3.9	19.5	.6	8.6	.4	.4	2.9	2.6	33.7	39.3	5.5	78.4
1990	21.1		2.9		4.0		.6		.5		2.0		35.0	36.0	5.0	76.0

[1] Preliminary. [2] Palladium, iridium, osmium, rhodium, & ruthenium. [3] Estimate. [4] Prior to 1988 data are in thousands of troy ounces. *Source: Bureau of Mines* T.512

Salient Statistics of Platinum and Allied Metals in the U.S. In Kilograms

Year	Net Import Reliance as a % of Apparent Consump.	Mine Production Platinum	Mine Production Palladium	Refinery Production Primary	Total Refined	Refiner, Importer & dealer Stocks as of Dec. 31 Platinum	Refiner, Importer & dealer Stocks as of Dec. 31 Palladium	Refiner, Importer & dealer Stocks as of Dec. 31 Other	Refiner, Importer & dealer Stocks as of Dec. 31 Total	Imports for Consumption Refined	Imports for Consumption Total	Exports Refined	Exports Total	Consumption (Apparent)
1985	92	N.A.	N.A.	227	40,563	17,783	14,152	3,171	35,106	106,928	124,090	16,369	27,640	104,511
1986	90	N.A.	N.A.	135	47,075	20,426	16,958	2,803	40,187	115,924	139,256	11,879	23,349	109,904
1987	91	780	2,330	191	50,243	19,004	17,356	2,052	38,412	98,879	118,397	13,423	22,031	95,457
1988[2]	91	1,240	3,730	297	51,488	18,438	14,837	2,240	35,515	110,948	124,324	20,301	28,787	103,302
1989[2]	90	1,430	4,850	339	50,546	14,791	15,182	2,570	32,543	111,107	113,278	23,082	38,128	101,230
1990[1]	88	1,617	5,381	300	68,300	13,000	12,000	2,000	27,000	101,000	106,000	17,000	34,000	98,841

[1] Estimate. [2] Preliminary. [3] Palladium, rhodium, iridium, osmium, ruthenium & osmium metals & balloys. [4] Ore & concentrates, waste, scrap & sweepings. [5] From crude platinum placers & byproduct platinum-group metals. *Source: Bureau of Mines* T.513



Average Merchant's Prices of Platinum in New York In Dollars Per Troy Ounce

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1974	162.68	172.50	172.50	172.50	174.55	195.00	195.00	195.00	195.00	195.00	195.00	195.00	184.98
1975	195.00	180.53	175.00	163.06	160.00	160.00	162.73	175.00	175.00	172.17	160.00	160.00	169.87
1976	160.00	160.00	160.00	160.00	160.00	163.54	175.60	182.50	182.50	182.50	167.00	167.00	168.39
1977	167.00	167.00	167.00	167.00	167.00	167.00	167.00	167.00	167.00	167.00	167.65	174.81	167.71
1978[1]	186.55	206.58	217.07	220.00	220.00	227.73	237.89	241.74	250.23	253.18	284.00	300.00	237.08
1979	303.41	325.00	325.00	327.38	350.00	350.00	350.00	357.83	380.00	380.00	380.00	393.33	351.83
1980	420.00	420.00	420.00	420.00	420.00	420.00	420.00	425.24	475.00	475.00	475.00	475.00	436.77
1981	475.00	475.00	475.00	475.00	475.00	475.00	475.00	475.00	475.00	475.00	475.00	475.00	475.00
1982	369.26	361.95	322.46	338.95	314.43	278.26	286.90	290.41	334.98	324.58	346.65	370.95	328.32
1983	441.07	468.34	400.17	410.38	446.69	420.23	431.63	438.30	431.93	399.87	389.33	399.70	423.14
1984	375.11	391.38	398.47	395.17	388.95	386.31	345.55	336.03	327.36	324.65	328.45	309.11	358.83
1985	275.76	274.37	255.36	287.23	273.24	267.94	269.52	303.91	304.59	321.73	334.53	327.75	291.33
1986	362.77	377.74	412.48	422.93	415.52	431.23	436.50	526.52	597.92	578.50	524.65	480.14	463.91
1987	520.08	518.30	533.27	587.38	607.08	569.14	573.57	610.12	590.55	568.65	500.02	479.29	554.79
1988	494.14	458.64	496.49	527.73	548.91	581.32	548.51	532.80	513.16	527.35	577.74	567.36	531.18
1989[2]	528.69	532.66	538.26	539.96	517.20	498.81	503.16	485.20	479.29	485.48	508.73	507.24	510.39
1990[2]	498.23	517.17	496.45	478.37	487.89	481.67	480.24	493.41	461.34	425.58	421.99	417.05	471.63
1991[2]	407	385											

[1] Prior to 1978 prices are for *producer* prices. [2] Preliminary. *Source: American Metal Market*

T.511

PLATINUM–GROUP METALS

Average Open Interest of Platinum Futures in New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	18,262	21,595	17,931	15,281	18,547	16,626	16,216	16,487	15,902	13,455	12,690	13,634
1984	12,460	12,838	14,246	14,544	15,827	15,911	15,768	15,743	16,556	15,305	14,885	15,651
1985	15,107	14,770	14,307	12,934	11,787	11,844	11,585	14,225	15,229	12,615	14,618	16,534
1986	17,496	18,587	20,993	17.591	16,007	18,867	17,473	20,989	27,426	19,825	20,256	17,485
1987	16,641	16,544	18,629	20,777	19,675	17,977	17,290	22,890	24,421	22,631	20,458	19,756
1988	17,133	18,080	16,737	16,718	18,643	22,735	19,668	17,671	19,936	19,097	22,022	24,384
1989	19,334	18,648	19,736	19,895	19,661	20,597	17,310	19,121	19,165	16,981	19,934	20,392
1990	19,510	17,970	15,888	15,915	16,688	15,652	15,496	17,254	18,494	17,472	16,313	16,994
1991	15,497	16,053										

Source: N.Y. Mercantile Exchange T.515

Volume of Trading of Platinum Futures in New York In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	126.0	117.0	107.9	71.9	106.2	115.4	75.9	77.0	79.2	61.5	57.2	57.9	1,035.4
1984	44.7	43.7	68.9	54.5	44.9	53.8	55.2	38.4	52.2	35.9	38.3	40.7	571.1
1985	41.0	26.2	53.5	48.8	43.1	42.2	40.3	98.1	82.7	68.6	64.8	84.0	693.3
1986	101.3	114.7	139.8	100.3	77.0	122.2	75.4	189.8	289.4	164.8	136.6	113.3	1,624.6
1987	117.2	85.7	134.1	149.3	110.8	116.5	87.1	133.2	122.7	127.2	88.6	89.2	1,361.5
1988	82.8	77.6	119.2	74.3	123.3	182.2	111.5	105.8	125.1	114.6	164.8	179.2	1,460.5
1989	113.6	96.6	148.5	107.3	111.6	126.9	69.8	86.8	85.1	56.4	99.8	88.1	1,190.5
1990	85.6	80.9	81.3	55.3	65.2	70.1	52.7	73.8	77.2	68.0	50.1	56.8	817.1
1991	50.8	42.3											

Source: N.Y. Mercantile Exchange T.516

High, Low & Closing Prices of April Platinum Futures in New York In Dollars per Ounce

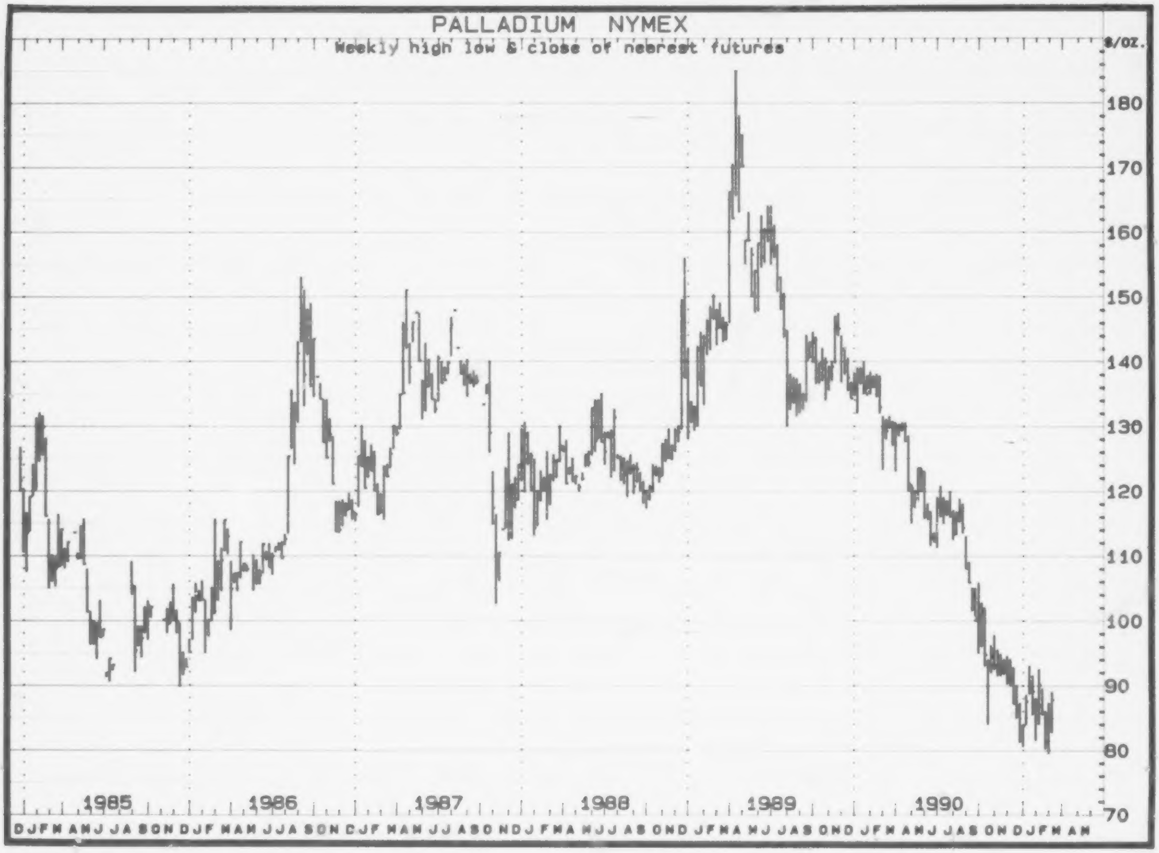
Year of Delivery		Year Prior to Delivery											Delivery Year				Life of Delivery Range
		Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	
1985	High	438.5	447.5	440.0	427.5	433.5	402.0	370.5	352.2	345.0	350.0	328.0	289.5	282.0	290.0	308.0	447.5
	Low	415.0	422.0	414.0	411.5	401.0	343.0	350.5	335.0	327.8	322.0	291.0	265.5	244.5	236.0	263.5	236.0
	Close	433.5	426.0	417.4	426.2	402.9	349.7	361.3	336.1	331.7	323.0	293.0	280.5	249.3	281.4	281.5	—
1986	High	—	308.5	329.8	303.9	293.9	298.5	357.0	333.0	345.0	362.5	356.0	385.0	425.8	444.5	434.0	444.0
	Low	—	279.5	290.5	273.0	275.5	261.2	287.0	297.5	311.0	326.5	321.0	340.0	345.2	391.2	385.0	261.2
	Close	—	307.3	290.5	281.5	278.6	297.7	338.9	309.5	327.9	349.0	346.2	372.7	402.3	399.1	426.9	—
1987	High	430.0	448.5	446.0	434.5	463.3	475.0	620.1	689.5	622.0	586.0	506.7	553.7	536.0	573.0	647.5	689.5
	Low	361.0	400.0	398.0	404.0	425.5	432.0	471.0	546.4	564.5	459.5	462.0	472.0	496.2	515.0	551.5	361.0
	Close	409.4	412.9	430.3	433.1	441.9	473.6	620.1	558.6	576.2	481.7	476.2	527.7	525.6	555.8	602.8	—
1988	High	546.5	590.0	670.8	657.0	622.5	639.1	669.0	635.0	637.0	546.0	531.5	518.8	475.0	538.0	549.0	670.8
	Low	516.0	533.6	573.0	588.0	565.0	572.0	600.0	580.0	516.0	484.3	493.0	452.1	439.5	462.0	512.0	439.5
	Close	542.6	574.8	629.7	600.4	574.0	636.5	612.1	582.6	541.1	527.8	507.6	457.9	475.0	530.7	516.1	—
1989	High	493.0	555.0	565.4	630.4	648.7	599.0	565.9	551.0	552.0	605.0	607.0	550.0	553.0	559.0	566.2	648.7
	Low	467.1	482.0	537.9	536.6	570.0	530.0	528.0	489.0	505.0	549.5	501.0	511.0	516.5	514.5	517.5	467.1
	Close	493.0	552.4	544.6	630.4	577.8	542.9	544.9	511.0	549.6	604.7	515.6	517.5	540.9	526.6	543.3	—
1990	High	548.3	557.0	571.2	544.0	524.5	532.0	515.0	508.0	505.0	549.7	526.5	529.0	536.9	514.0	490.3	571.2
	Low	525.9	525.0	528.0	491.0	484.0	495.8	480.5	475.0	486.5	496.3	496.0	473.0	503.1	471.0	467.0	467.0
	Close	539.9	535.6	530.5	506.8	506.5	508.9	480.5	502.7	498.7	520.0	496.3	512.2	508.0	474.5	467.2	—
1991	High	555.7	537.0	508.0	526.7	511.0	508.0	524.0	497.5	461.0	442.0	432.8	425.5	408.5			
	Low	532.1	497.3	473.5	497.0	488.2	485.5	492.0	439.4	394.5	409.2	404.0	380.0	373.5			
	Close	532.1	497.3	493.3	511.0	504.7	501.9	495.1	445.3	443.4	429.2	414.0	386.5	405.7			

Source: N.Y. Mercantile Exchange T.514

Average Open Interest of Palladium Futures in New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1987	6,370	6,281	6,280	7,359	7,334	6,386	6,739	7,576	6,968	7,476	6,651	5,621
1988	6,094	6,434	6,194	6,269	6,419	7,038	7,330	7,160	6,360	6,263	6,188	6,289
1989	6,460	6,758	6,636	9,082	9,173	9,116	8,307	7,616	7,105	6,847	7,123	6,660
1990	6,296	6,350	5,276	5,359	5,476	5,361	5,493	5,717	5,165	5,100	5,316	4,565
1991	4,658	4,559										

Source: N.Y. Mercantile Exchange



High, Low & Closing Prices of March Palladium Futures in New York In Dollars Per Ounce

Year of Delivery		Year Prior to Delivery										Delivery Year			Life of Delivery Range
		Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	
1989	High	—	123.25	123.10	126.50	132.00	128.50	123.50	123.00	123.50	127.50	145.25	144.50	150.25	155.00	155.00
	Low	—	114.90	116.45	117.00	120.95	118.15	118.50	116.00	117.50	121.00	124.25	129.25	138.75	142.50	114.90
	Close	—	121.20	118.70	125.25	121.60	121.00	[illegible]	117.95	122.00	126.70	129.00	138.45	144.05	150.65	—
1990	High	137.55	163.75	176.00	156.00	153.00	154.00	142.75	145.25	143.60	147.50	145.25	139.90	138.00	131.50	176.00
	Low	129.00	135.00	155.65	141.40	142.00	140.00	131.00	134.00	136.50	136.00	134.75	132.00	123.25	123.00	123.00
	Close	137.55	163.75	155.65	142.15	151.35	141.75	134.10	143.05	136.65	140.15	135.50	136.80	126.25	126.65	—
1991	High	—	—	135.45	126.00	122.60	121.80	121.50	113.50	104.00	97.50	93.90	93.00	92.50		
	Low	—	—	122.00	121.50	115.75	117.00	112.40	96.00	86.50	90.00	80.55	81.50	79.50		
	Close	—	—	122.00	123.00	120.25	117.25	112.40	97.95	97.25	91.60	81.25	84.75	87.05		

Source: N.Y. Mercantile Exchange

Average Dealer[1] Price of Palladium in the United States In Dollars Per Troy Ounce

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1986	101.83	103.18	110.62	110.64	109.23	110.40	112.00	127.05	142.30	136.68	125.36	118.15	117.29
1987	124.13	121.32	122.74	136.58	146.55	140.00	141.34	143.32	137.93	132.72	113.42	121.99	131.84
1988	125.26	120.40	122.67	123.62	124.06	128.77	126.25	123.84	121.04	122.59	126.80	133.30	124.89
1989[2]	135	141	145	166	152	152	150	134	137	137	138	137	144
1990[2]	134	135	130	127	118	115	116	115	103	94	94	90	115
1991[2]	87	84											

[1] Based on wholesale quantities, prompt delivery. [2] Estimate. *Source: American Metal Market* T.510

Pork Bellies

Pork bellies, the source of bacon, are obtained from the underside of a hog. Bellies account for about 12 percent of a hog's live weight, but represent a somewhat larger percentage of the total cutout value of the obtained pork products. A hog has two bellies, each weighing about 8-18 pounds, depending on the hog's slaughter weight, which is typically 230 to 240 pounds.

Consumer demand for bacon is strongest during the summer, when lighter foods are preferred, and lowest in the winter. Prices do not necessarily follow the seasonality of demand. At times, futures have set new contract lows in the summer, and prices have firmed during the winter. These contraseasonal price moves can be partly attributed to the adequacy of supplies deliverable against futures at exchange-approved warehouses. The fact that there are no futures contracts between the August and February deliveries adds to price distortions.

Belly prices are sensitive to the inventory in cold storage and to net movement in or out of storage. These are clues to demand, although a better measure is the amount of bellies being sliced into bacon. Slicing statistics are released weekly, as are warehouse stocks. More comprehensive inventory statistics are released monthly by the USDA.

During the first half of 1989, the monthly cold storage report showed stocks well above the like 1988 period, but the setting changed dramatically in the following months, and inventories ran persistently under a year earlier, reaching an all-time low of 4.8 million pounds on September 30, 1990, versus an average for that date of 31.5 million in 1988 and 1989. On October 31, 1990, the nation's belly inventory of 5.5 million pounds was the second lowest on record for the date, though it was somewhat above market expectations.

Prices in the central U.S. for 12-14 pounds bellies averaged about 65 cents/lb. in October, versus slightly more than 51 cents in late summer and 36.88 cents in October 1989. Retail bacon prices trended higher in 1990, averaging about $2.18/lb. in September, versus $1.72 in September 1989. Nearby belly futures traded up to almost 74 cents/lb., a 3-year high, in November 1990.

Retail bacon demand is sensitive to trends in disposable income and to economic weakness. The U.S. recession in 1990 was expected to carry into 1991, when pork production was likely to show some improvement over first-half 1990, suggesting a possible buildup in belly stocks and increasing pressure on prices. Moreover, growing consumer preference for less fatty foods was likely to reduce bacon consumption.

Futures Market

Pork belly futures and options are traded on the Chicago Mercantile Exchange (CME).

United States Quarterly Sliced Bacon Production[1] In Millions of Pounds

Year	Retail	Commercial	Total	Year	Retail	Commercial	Total
1982	1,000.7	500.8	1,501.5	1984	1,038.0	693.6	1,754.0
I	246.3	120.9	367.2	I	253.6	176.4	430.0
II	247.2	128.0	375.3	II	246.8	162.2	409.0
III	273.5	129.2	402.6	III	268.8	166.4	435.2
IV	233.7	122.7	356.4	IV	268.8	188.6	457.4
1983	1,113.6	562.8	1,676.4	1985	—		1,672.5
I	248.6	127.7	376.2	1986	—		1,559.7
II	250.8	140.8	391.6	1987	—		1,579.9
III	260.6	152.1	412.8	1988[2]	—		2,124.8
IV	353.6	142.2	495.7	1989			

[1] Smoked, dried or cooked. Under Federal Inspection. [2] Preliminary. *Source: Agricultural Marketing Service, USDA* T.517a

U.S. Frozen Pork Belly Storage Stocks (In Thousand Pounds, as of First of the Month)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1982	54,639	46,167	41,855	66,061	—	—	72,593	—	—	7,558	—	—
1983	31,292	33,592	33,400	44,304	54,510	64,671	63,468	48,409	26,642	15,672	20,047	52,924
1984	78,648	71,568	78,169	95,009	112,205	127,527	115,034	85,630	43,626	22,321	24,048	38,333
1985	57,361	53,623	51,633	68,315	83,836	96.040	88,367	61,397	35,764	20,158	29,787	47,427
1986	51,314	47,633	51,218	62,508	68,325	65,895	61,547	40,333	20.797	12.941	17,022	24,528
1987	37,771	34,900	34,717	41,821	50,482	58,245	47,367	28,649	18,938	12,620	14,850	35,487
1988	62,089	62,996	67,035	90,347	102,543	111,484	103,401	73,747	42,623	31,054	49,550	93,254
1989	113,137	116.191	121,556	127,617	143,751	142,340	126,676	94,107	49,083	32,031	39,358	67,489
1990[1]	85,026	77,255	85,789	96,945	102,899	105,432	87,983	55,859	23,352	4,785	5,506	24,055
1991[1]	46,998	48,750										

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.517

Weekly Pork Belly Storage Movement

1988 Week Ending	In	Out	On Hand	Net Movement	1989 Week Ending	In	Out	On Hand	Net Movement
	Stocks[1] in Thousands of Pounds					Stocks[1] in Thousands of Pounds			
Jan. 2	2,834	450	55,242	+ 2,384	Jan. 1	1,876	1,870	102,999	+ 6
9	3,067	1,262	57,047	+ 1,805	14	1,981	1,621	103,359	+ 360
16	2,452	1,200	58,298	+ 1,252	21	1,863	2,232	102,990	− 369
23	951	1,042	58,207	− 91	28	1,873	3,403	101,460	−1,530
30	208	3,395	55,020	− 3,187	Feb. 4	2,479	1,779	102,161	+ 700
Feb. 6	162	2,099	53,083	− 1,937	11	2,966	1,288	103,839	+1,678
13	1,241	623	53,700	+ 618	18	2,654	1,013	105,480	+1,641
20	1,749	75	55,374	+ 1,674	25	1,770	985	106,265	+ 785
27	1,539	51	56,862	+ 1,488	Mar. 4	1,740	735	107,270	+1,005
Mar. 5	4,730	—	61,592	+ 4,730	11	1,737	449	108,558	+1,288
12	4,296	144	65,744	+ 4,152	18	4,732	900	112,390	+3,832
19	4,330	10	70,064	+ 4,320	25	2,776	1,029	114,137	+1,747
26	5,153	172	75,105	+ 4,981	Apr. 1	2,601	794	115,944	+1,807
Apr. 2	4,416	96	79,365	+ 4,320	8	2,959	565	118,338	+2,394
9	3,125	242	82,255	+ 2,883	15	5,506	1,032	122,812	+4,474
16	2,467	150	84,557	+ 2,317	22	4,911	571	127,152	+4,340
23	1,450	155	85,860	+ 1,295	29	4,401	639	130,914	+3,762
30	2,804	89	88,395	+ 2,715	May 6	1,369	675	131,608	+ 694
May 7	4,237	8	92,640	+ 4,245	13	1,582	506	132,684	+1,076
14	3,470	111	95,999	+ 3,359	20	776	662	132,798	+ 114
21	1,850	546	97,303	+ 1,304	27	1,292	930	133,160	+ 362
28	745	846	97,202	− 101	June 3	383	2,323	131,220	−1,940
June 4	507	1,078	95,631	− 571	10	320	2,190	129,350	−1,870
11	625	1,592	95,664	− 967	17	2	2,606	126,746	−2,604
18	138	1,877	93,925	− 1,730	24	20	4,627	122,139	−4,607
25	723	2,025	92,623	− 1,302	July 1	147	3,647	118,639	−3,500
July 2	1,542	2,651	91,514	− 1,109	8	73	5,885	112,827	−5,812
9	1,097	3,343	89,268	− 2,246	15	87	6,620	106,294	−6,533
16	510	6,306	83,472	− 5,796	22	117	7,719	98,692	−7,602
23	246	7,986	75,732	− 7,740	29	31	8,253	90,470	−8,222
30	89	8,620	67,201	− 8,531	Aug. 5	12	8,919	81,563	−8,907
Aug. 6	127	8,562	58,766	− 8,435	12	5	9,785	71,783	−9,780
13	225	6,500	52,491	− 6,275	19	43	9,069	62,757	−9,026
20	83	6,652	45,922	− 6,569	26	80	9,326	53,511	−9,246
27	44	6,187	39,779	− 6,143	Sept. 2	138	8,640	45,009	−8,502
Sept. 3	480	4,214	36,045	− 3,734	9	36	4,468	40,577	−4,432
10	696	4,080	32,661	− 3,384	16	201	4,251	36,527	−4,050
17	3,529	4,518	28,663	− 3,999	23	455	4,651	32,331	−4,196
24	1,478	4,053	26,087	− 2,575	30	299	3,559	29,071	−3,260
Oct. 1	1,536	2,765	24,858	− 1,229	Oct. 7	406	3,031	26,446	−2,625
8	1,877	1,491	25,244	+ 386	14	2,606	2,930	26,122	− 324
15	3,366	1,036	27,574	+ 2,330	21	4,823	1,533	29,412	+3,290
22	6,115	732	32,957	+ 5,383	28	4,413	1,225	32,600	+3,188
29	7,993	631	40,319	+ 7,632	Nov. 4	4,214	1,563	35,251	+2,651
Nov. 5	10,548	794	50,073	+ 9,754	11	5,796	1,956	39,091	+3,840
12	11,182	721	60,534	+10,461	18	8,034	1,578	45,547	+6,456
19	8,217	537	68,214	+ 7,680	25	8,577	461	53,663	+8,116
26	6,929	335	74,808	+ 6,594	Dec. 2	10,199	1,064	62,797	+9,135
Dec. 3	9,222	285	83,745	+ 8,937	9	9,908	993	71,712	+8,915
10	10,359	606	93,498	+ 9,753	16	7,638	1,254	78,140	+6,384
17	6,179	1,415	98,262	+ 4,764	23	4,799	1,649	81,290	+3,150
24	5,315	1,595	101,982	+ 3,720	30	2,283	1,959	81,614	+ 324
31	2,278	1,267	102,993	+ 1,011					

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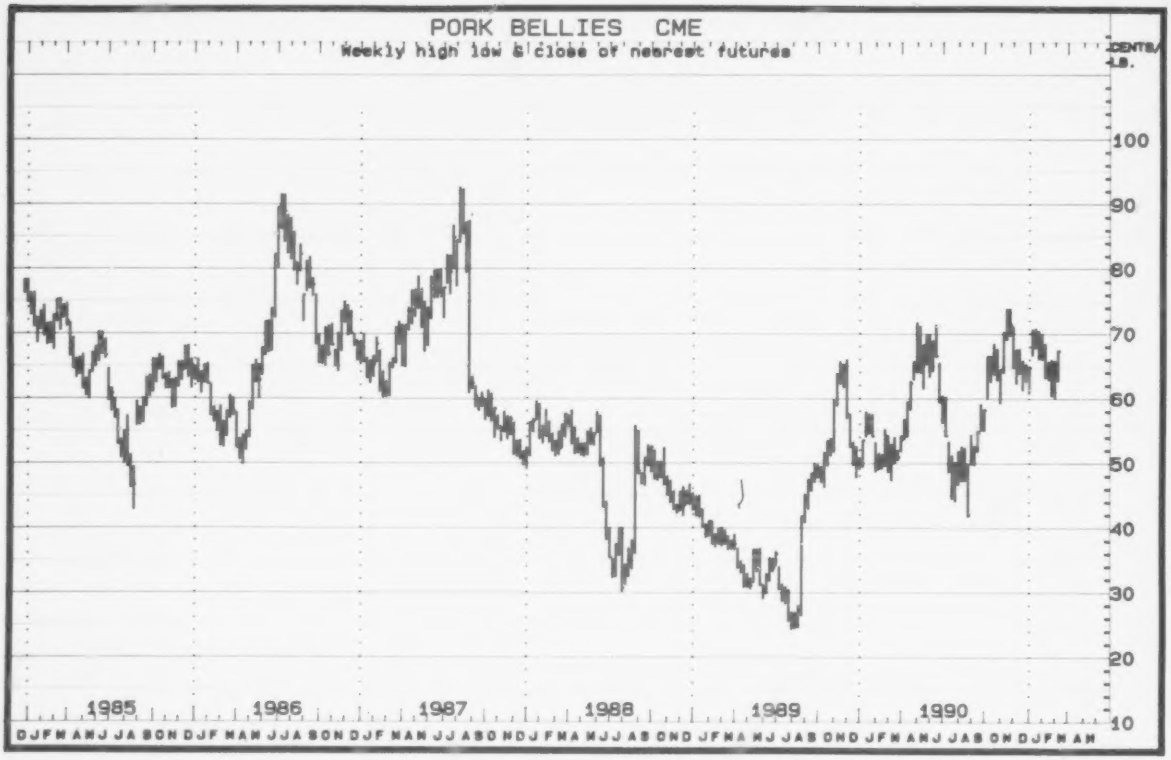
[1] Total approved Chi. Merc. Exch. warehouses. *Sources: U. S. Department of Agriculture; Chicago Mercantile Exchange* T.518

PORK BELLIES



Average Open Interest of Pork Bellies Futures at Chicago In Contracts

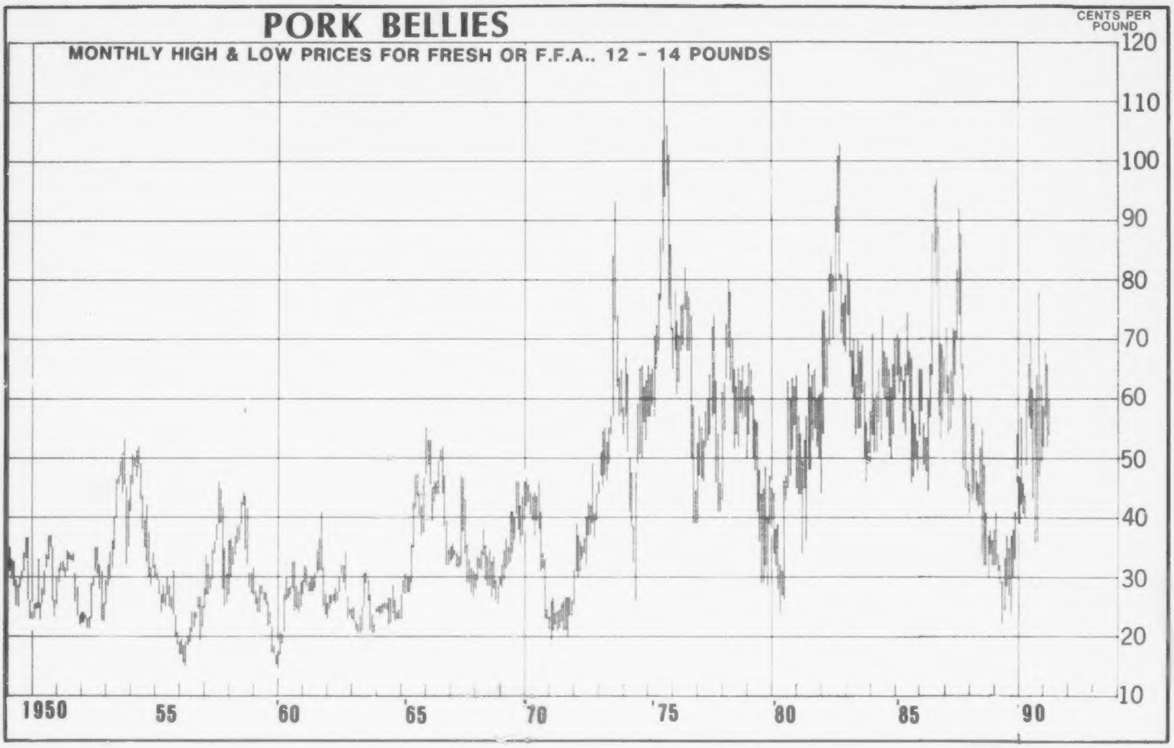
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1982	16,767	21,677	21,592	26,053	26,108	22,910	16,283	14,225	16,509	17,426	19,459	19,117
1983	21,563	18,760	17,633	18,029	17,012	17,488	16,560	12,570	14,172	17,374	18,916	20,814
1984	19,762	16,732	16,932	18,932	17,465	17,397	13,661	7,781	7,845	9,297	11,583	12,769
1985	13,804	14,545	13,138	12,356	11,526	11,315	9,770	6,878	6,710	7,507	8,481	9,018
1986	8,313	7,969	7,357	8,635	9,509	10,781	9,135	7,462	8,515	8,287	10,412	11,440
1987	11,617	10,159	10,936	13,586	14,277	12,863	11,291	8,940	8,301	9,550	9,924	11,846
1988	11,250	10,942	13,421	16,229	17,887	18,428	15,782	11,874	14,678	15,860	19,292	19,723
1989	20,453	20,444	21,897	22,117	24,931	25,898	20,053	12,724	11,916	12,501	14,802	13,844
1990	12,885	12,114	13,017	15,338	14,513	13,083	11,146	6,104	6,059	7,851	11,419	12,589
1991	11,777											

Source: Chicago Mercantile Exchange T.520

Volume of Trading of Pork Bellies Futures at Chicago In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	196,040	216,333	263,431	265,863	301,763	248,825	217,434	229,207	188,129	224,449	227,482	232,688	2,811,674
1983	276,556	229,198	207,543	225,034	226,617	227,522	218,813	169,113	132,894	154,642	159,982	175,363	2,403,277
1984	221,795	182,080	186,817	159,774	207,820	173,066	187,619	119,469	77,028	121,926	148,940	121,711	1,908,045
1985	173,488	137,334	133,509	148,489	149,809	135,319	136,026	89,784	77,326	99,291	85,377	91,634	1,457,386
1986	92,033	81,768	75,830	96,642	106,958	100,331	109,981	78,967	91,470	87,712	91,779	86,868	1,100,339
1987	104,134	95,108	92,707	118,107	112,112	120,598	118,996	89,564	60,670	66,423	53,903	64,688	1,097,010
1988	70,150	76,741	85,947	99,754	116,780	179,505	112,356	90,371	79,667	94,646	84,236	96,446	1,186,599
1989	107,577	89,922	84,768	90,353	145,975	152,207	119,733	91,200	75,155	106,389	141,983	105,714	1,310,976
1990	109,036	100,813	129,476	133,946	165,880	143,663	122,187	74,653	53,428	76,549	112,752	80,746	1,303,129
1991	106,078												

Source: Chicago Mercantile Exchange T.521



High, Low & Closing Prices of May Pork Bellies Futures at Chicago In Cents per Pound

Year of Delivery		Year Prior to Delivery										Delivery Year				Life of Delivery Range
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1984	High	65.40	65.95	65.90	61.90	64.75	71.55	66.80	64.40	65.60	67.40	71.30	68.10	71.07	74.10	70.65	74.10
	Low	61.25	62.80	60.00	56.00	54.70	61.50	59.50	58.35	60.32	60.40	62.12	59.25	60.55	65.50	64.35	54.70
	Close	64.90	64.72	61.00	57.15	61.90	65.37	59.37	64.22	62.30	63.62	67.27	60.70	69.22	65.82	65.42	—
1985	High	79.95	80.50	79.00	82.47	77.70	69.50	67.70	68.52	76.50	79.00	79.15	74.90	75.40	71.52	66.30	82.47
	Low	67.00	74.95	73.80	75.40	63.70	63.15	61.05	62.50	67.90	70.75	70.75	67.47	70.20	63.10	59.80	59.80
	Close	78.50	75.30	74.65	77.75	64.75	66.80	62.62	68.15	76.40	78.52	72.75	70.72	71.82	65.65	65.65	—
1986	High	75.60	75.25	74.57	75.27	70.00	64.35	64.85	67.52	66.65	67.80	66.90	63.45	61.67	58.55	65.75	75.60
	Low	69.00	70.55	69.80	69.70	59.50	57.05	57.25	62.35	60.00	63.00	62.35	54.40	54.37	49.65	57.65	49.65
	Close	75.35	73.70	74.12	70.30	62.95	59.65	64.85	63.65	66.45	64.90	63.50	55.85	55.87	58.55	59.85	—
1987	High	63.15	63.20	62.50	70.80	78.20	76.40	79.87	69.70	72.95	72.20	68.22	66.85	71.25	76.70	78.72	79.87
	Low	61.50	58.40	59.20	58.20	64.92	69.85	66.37	63.90	63.00	65.20	61.90	58.35	61.20	64.75	70.70	58.40
	Close	62.77	62.20	61.10	66.92	75.40	73.85	66.45	66.25	71.62	65.77	64.45	61.40	68.97	75.10	72.00	—
1988	High	56.25	59.95	75.60	64.85	66.55	67.75	62.50	60.65	58.75	56.00	61.40	60.20	57.55	58.05	55.27	75.60
	Low	54.40	51.00	57.80	59.00	58.50	60.95	56.45	54.40	54.45	51.10	52.27	52.92	52.10	51.10	50.90	50.90
	Close	54.50	59.45	60.20	59.00	66.55	61.90	57.10	56.90	55.70	52.35	55.75	53.27	56.12	51.35	54.02	—
1989	High	—	—	62.00	65.50	59.70	57.25	54.50	54.25	49.85	48.25	47.17	42.35	40.30	36.70	36.65	65.50
	Low	—	—	59.25	57.15	52.55	50.97	48.50	48.47	44.25	44.25	40.85	37.55	36.50	30.70	30.47	30.47
	Close	—	—	62.00	60.27	52.90	50.97	54.40	48.67	47.02	45.50	41.40	38.30	37.35	31.37	34.32	—
1990	High	54.40	49.90	54.50	53.35	49.80	46.70	50.80	55.47	63.75	58.05	59.50	56.70	54.90	66.65	71.67	71.67
	Low	50.60	47.10	46.85	48.05	41.15	39.50	44.40	46.60	54.85	48.25	49.25	50.60	48.37	53.75	61.50	39.50
	Close	51.70	47.25	48.40	51.80	41.55	45.70	48.90	55.47	57.30	50.65	52.05	52.45	53.57	66.65	67.40	—
1991	High	58.30	61.40	61.10	63.35	57.60	59.00	59.40	68.15	73.12	66.70	70.72	66.55				
	Low	57.40	57.70	58.25	54.25	49.50	51.15	50.85	59.45	60.45	61.00	61.10	59.45				
	Close	57.67	58.90	60.15	54.25	57.60	51.15	58.67	60.67	65.65	63.60	66.30	63.80				

Source: Chicago Mercantile Exchange

T.519

Potatoes

The first estimate of fall 1990 harvested potato area in the U.S. showed a 6 percent increase to 1.15 million acres, the largest fall acreage since 1978. Idaho and Washington accounted for almost half of the total. With fall yields expected to average around 305 cwt./acre, production was likely to range between 345-355 million cwt., or some 6 percent to 9 percent higher than the short 1989 crop of 325 million and near 1985's record 354 million cwt. Added to the 51.5 million cwt. of potatoes produced during the winter, spring and summer, that put total U.S. production in 1990 at an estimated 395 million to 405 million cwt.

U.S. potato production is classified by seasonal group: winter (Jan.-Mar.), spring (Apr.-Jun.), summer (Jul.-Sept.), and fall (Oct.-Dec.). These seasons are approximations, as there is some overlapping of the harvest. Generally, the marketing season closely follows the harvesting season, except for the crop in the fall, when marketing from storage may extend through August of the following year.

Florida and California account for all of the winter crop and more than half the spring crop. Sixteen states account for the summer crop, contributing some 6 percent of total potato production.

Idaho's fall crop, at slightly less than 100 million cwt. in past years, has generally exceeded Washington's output by about 30 million cwt. Some two dozen states account for the fall crop, for which average yield lies near 300 cwt./acre, versus about 235 cwt. for the spring and summer crops and the low 200s area for the winter crop.

Prices for potato products in 1990 averaged above year-earlier levels, despite a prospective record crop. The retail price of fresh white potatoes in first-half 1990 averaged 15 percent above the first half of 1989; the retail price for frozen french fried potatoes surged 15 percent over a year earlier, the largest increase since 1981. And the retail price for potato chips increased 2 percent to a first-half 1990 average of $2.94/lb., versus an annual average of $2.64 during 1984-88.

With strong domestic and export demand for fresh and processed potatoes, an average growing price for the 1990 fall crop of $4.50 to $5.00/cwt., just under the 1970-88 trend, was expected.

Japan is the largest importer of U.S. fries. For the crop year October 1988 to September 1989, U.S. frozen potato exports rose by 51 percent to 4.5 million cwt. (fresh-weight equivalent), and amounted to 1.3 percent of the 1988/89 crop. Fresh potato exports totaled 191 million pounds during the first half of 1990, with most of that shipped to Canada.

Fresh potato imports, most of which are from Canada and used for seed, totaled 291 million pounds during first-half 1990, reflecting strong demand, due to an increase in planted area.

Salient Statistics of Potatoes in the United States

Crop Year	Acreage		Yield Per Harv. Acre Cwt.	Total Production Mil. Cwt.	Farm Disposition — Used Where Grown			Farm Price $ Cwt.	Value of		Stocks on Jan. 1[4] 1,000 Cwt.	Foreign Trade[5] (Fresh)		Consumption[5] Per Capita In Lbs.	
	Planted	Harvested			Seed & Feed	Shrinkage & Loss	Sold[3]		Prod.[2]	Sales		Dom. Exports	Imports	Fresh	Total
	1,000 Acres				Million Cwt.				Million $			Mil. Lbs.			
1983	1,272	1,242	269	333.7	6.0	24.7	303.3	5.82	1,936	1,764	178,980	268.1	279.6	49.7	118.1
1984	1,337	1,298	279	362.0	5.7	30.1	326.7	5.69	2,046	1,856	165,330	343.6	253.6	48.8	122.1
1985	1,409	1,359	299	406.6	8.1	52.8	346.2	3.92	1,571	1,355	173,380	320.6	300.5	46.7	122.4
1986	1,257	1,220	296	361.7	6.3	28.3	326.9	5.03	1,808	1,645	202,800	327.8	280.8	49.4	125.7
1987	1,317	1,293	301	389.3	5.7	31.9	351.8	4.38	1,683	1,539	180,915	356.3	402.8	48.9	125.9
1988	1,285	1,259	283	356.4	5.8	25.1	325.6	6.02	2,144	1,958	196,760	410.3	388.4	51.4	123.2
1989[1]	1,305	1,282	289	370.4	5.7	25.0	339.7	7.36	2,717	2,501	177,750	447.0	509.3	49.8	126.2
1990[1]	1,379	1,359	289	393.2							173,400	395.0			

Note: 60 pounds equals one bushel. [1] Preliminary. [2] Farm weight basis. Excludes canned & frozen potatoes. [3] For all purposes, including food, seed processing livestock feed. [4] Merchantable stocks held by growers & local dealers. [5] Calendar year.
Source: National Agricultural Statistics Service, U.S.D.A. T.522

U.S. Cold Storage Stocks of All Frozen Potatoes (First of Month) In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	767.3	800.1	879.9	899.8	958.0	986.6	1,015.3	823.2	603.8	637.2	775.2	817.4
1984	773.0	754.8	783.9	827.6	808.2	843.3	840.4	626.8	516.5	635.3	821.3	884.2
1985	892.3	900.0	943.4	1,003.3	1,023.6	1,081.6	1,058.4	828.2	735.4	861.4	1,014.2	1,020.2
1986	1,012.3	907.0	950.4	1,017.3	1,075.7	1,126.5	1,096.9	958.1	733.4	771.2	904.1	941.2
1987	894.1	786.7	795.9	856.6	886.7	962.9	1,003.3	816.4	675.5	774.2	947.5	966.1
1988	882.6	899.0	977.7	965.1	950.7	963.9	1,000.8	882.5	835.0	917.9	1,047.5	1,044.4
1989	988.7	927.4	944.3	947.3	968.7	986.7	961.5	739.9	611.3	734.2	878.7	938.0
1990[1]	917.3	932.7	995.6	1,041.2	1,059.0	1,061.3	977.6	769.3	688.1	852.5	995.6	999.5
1991[1]	975.8	993.3										

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.529

Potato Crop Production Estimates, Stocks & Disappearance in the U.S. In Millions of Cwt.

	Crop Production Estimates					Total Storage Stocks[2]						Disappearance of Previous Fall Crop Until					
	Total Crop			Fall Crop			Following Year						Following Year				
Year	Oct. 1	Nov. 1	Dec.	Oct 1	Nov. 1	Dec. 1	Jan. 1	Feb 1	Mar. 1	Apr. 1	May 1	Dec. 1	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1
1980	296.9	296.9	301.0	260.7	260.7	172.0	147.0	122.1	97.7	72.7	44.5	84.1	110.0	135.0	160.0	186.0	
1981	329.9	329.9	333.7	287.1	287.1	193.6	164.4	137.8	111.8	82.3	50.8	93.6	121.0	149.0	175.0	204.0	
1982	350.0	350.0	349.3	306.9	308.9	206.5	179.0	150.2	122.5	90.1	57.3	92.3	121.0	149.0	178.0	209.0	
1983	329.8	329.8	325.7	292.7	292.7	192.5	165.3	138.9	112.7	81.7	50.4	90.7	117.0	143.0	169.0	200.1	
1984	358.8	358.8	361.6	310.0	310.0	201.4	173.4	144.8	118.4	86.4	52.5	130.0	159.0	187.0	217.0	251.0	
1985	—	400.4	404.1	—	346.1	235.5	202.8	171.5	138.7	104.5	65.4	139.0	171.0	203.0	238.0	277.0	
1986	—	352.3	352.3	—	307.5	209.4	180.9	154.5	128.7	95.1	59.8	96.8	124.0	150.0	176.0	209.0	250
1987	—	361.5	—	—	342.7	225.9	196.8	167.3	138.8	105.9	70.0	110.0		166.0	195.0	220	262.0
1988	—	352.1	—	—	309.9	206.4	177.8	151.1	124.5	92.6	59.4	101.0	130	155.0	180.0	213.0	245.0
1989[1]	—	367.3	—	—	322.7	202.1	173.6	144.3	116.6	84.3	50.7	115.0	143.0	173.0	200.0	233.0	266.0
1990[1]		393.2			342.5	217.3	186.2	154.3				119.0	150.0	182.0			

[1] Preliminary. [2] Held by growers & local dealers in the fall producing areas. *Source: Crop Reporting Board, U.S.D.A.* T.525

United States Potato Production by Seasonal Groups In Millions of Cwt.

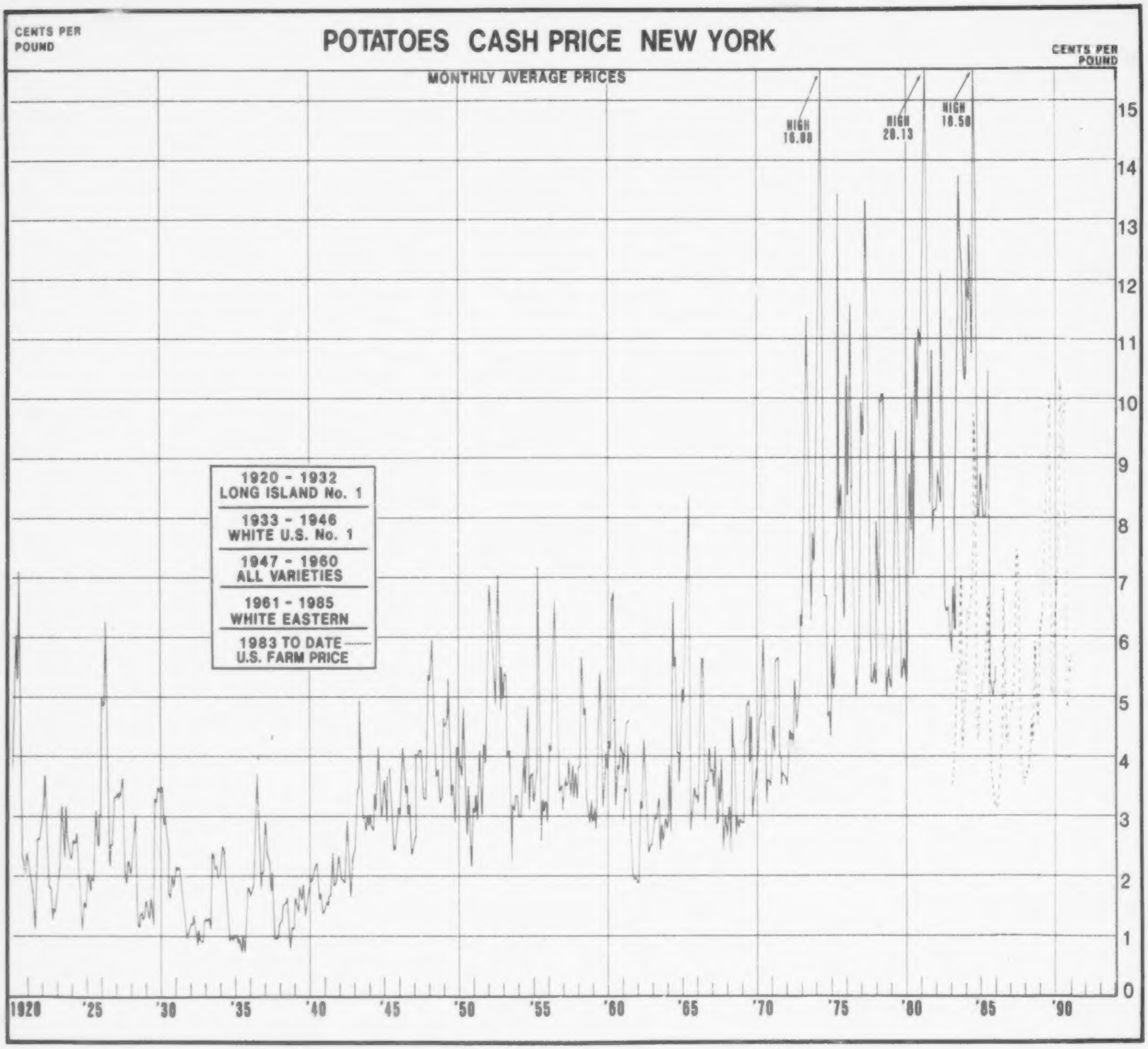
		Spring			Summer			Fall								
Year	Winter	Florida	Calif.	Total Spring	New Mex.	Va.	Total	Maine	Wisc.	Minn.	Colo.	No. Dak.	Wash.	Idaho	Oregon	Total Fall
1980	2.4	3.6	8.8	17.1	.9	1.5	17.2	25.0	16.0	9.9	11.0	15.7	43.9	79.8	19.7	267.2
1981	2.2	5.3	10.3	20.8	1.3	2.3	20.5	26.5	18.2	13.3	11.6	20.1	52.9	84.5	21.7	297.1
1982	2.3	5.7	9.6	21.0	2.2	2.5	22.8	27.0	22.6	11.5	12.8	17.3	52.8	91.8	21.1	309.1
1983	2.2	5.1	8.3	18.3	1.6	1.0	18.5	22.6	18.9	10.3	14.0	20.5	54.1	86.0	20.7	294.7
1984	2.6	6.7	11.1	24.0	2.6	1.5	22.7	21.4	21.4	13.8	17.2	20.6	56.9	86.6	23.5	312.7
1985	2.7	6.6	10.6	23.0	2.9	3.3	27.3	28.2	24.1	14.1	17.9	23.6	63.6	102.5	26.9	353.6
1986	3.0	7.0	7.6	19.9	2.8	1.1	20.7	21.9	20.1	13.7	18.8	21.6	62.0	90.2	23.2	318.2
1987	2.5	5.6	7.9	19.0	3.5	2.0	22.8	23.2	22.1	16.3	19.5	24.1	67.0	99.7	25.9	345.0
1988	2.6	6.8	7.5	20.1	3.1	2.0	20.2	22.0	20.0	12.1	19.0	15.5	63.3	102.6	20.7	313.6
1989	2.8	6.9	7.9	20.9	4.0	1.4	22.2	22.0	23.1	13.9	20.6	15.1	64.3	102.5	23.3	324.7
1990[1]	2.3	8.7	8.4	23.8	4.4	1.9	24.5	20.5	23.1	14.3	22.1	16.7	65.9	112.3	23.0	342.5
1991[1]	2.4															

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.524

Utilization of Potatoes in the United States In Millions of Cwt.

	Sales											Non-sales			
		For Processing							Other Sales						
Crop Year	Table Stock	Chips, Shoestrings	For dehydration	Frozen French Fries	Other Frozen Pdt's	Canned Potatoes	Other Canned Pdt's[2]	Starch & Flour	Livestock Feed	Seed	Total Sales	Used on Farms Where Grown	Shrinkage & Loss	Total Non-sales	Total
1980	96.8	37.9	28.2	67.2	13.7	2.1	2.0	2.2	3.9	19.2	273.1	5.0	23.2	29.6	302.9
1981	112.0	39.3	29.9	79.8	16.8	2.5	1.7	2.3	3.6	20.4	308.3	4.5	26.3	32.3	340.6
1982–3	120.3	40.7	27.7	76.0	17.3	2.7	1.8	4.6	6.2	19.5	316.8	4.7	31.0	38.3	355.2
1983–4	107.3	43.3	26.8	74.4	19.7	2.1	2.0	3.0	3.8	20.9	303.3	4.6	24.7	30.6	333.9
1984–5	113.8	42.3	27.8	87.4	20.3	2.6	1.8	3.4	4.7	22.6	326.7	4.4	30.1	35.9	362.6
1985–6	125.3	42.2	30.0	94.7	17.9	3.0	1.6	3.5	8.1	20.0	346.2	5.1	52.8	60.9	407.1
1986–7	109.3	45.8	28.4	96.2	15.7	2.8	1.3	2.8	4.0	20.7	327.1	5.1	28.4	34.6	361.7
1987–8	129.6	40.5	30.8	102.6	16.6	3.0	1.6	2.2	3.8	21.0	351.8	4.5	31.9	37.6	389.3
1988–9	108.3	44.5	28.8	95.5	17.6	2.9	2.0	1.4	3.3	21.1	325.6	4.8	25.1	30.9	356.4
1989–90[1]	113.0	44.2	32.2	100.5	19.1	3.0	1.9	.9	2.8	22.3	339.7	4.7	25.0	30.7	370.4

[1] Preliminary. [2] Hash, stews, soups. [3] Includes 12.0 sold for livestock feed & starch under the U.S.D.A. diversion program.
Source: Crop Reporting Board, U.S.D.A. T.531



U.S. Average Price Received by Farmers for Potatoes In Dollars Per Cwt.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Avg.[1]
1981	7.38	7.51	8.12	8.41	8.22	9.13	9.67	7.06	4.84	4.01	4.44	4.65	5.42
1982	4.71	4.78	5.03	5.59	6.21	7.11	6.52	5.80	4.25	3.78	3.73	3.71	4.45
1983	3.53	3.69	4.07	4.65	5.52	5.33	6.36	7.03	4.94	4.14	4.87	5.46	5.82
1984	6.43	6.29	6.55	6.69	7.04	7.52	9.72	8.75	4.87	4.26	4.60	4.90	5.69
1985	5.22	5.31	5.40	5.80	6.44	6.67	5.84	3.83	3.56	3.51	3.46	3.26	3.92
1986	3.12	3.35	3.50	3.99	4.39	4.79	6.91	5.68	4.28	4.20	4.63	4.78	5.03
1987	5.01	4.93	5.05	5.66	7.23	6.94	7.06	4.52	3.89	3.74	3.62	3.63	4.38
1988[2]	3.70	3.74	4.02	4.11	4.62	4.30	5.28	5.91	4.55	4.30	5.72	5.79	6.02
1989[2]	6.24	6.43	7.34	8.33	8.78	8.61	10.60	7.58	5.06	5.03	6.32	6.81	7.36
1990[2]	7.36	7.40	8.30	9.53	9.52	8.84	9.31	8.36	5.47	4.69	5.28	5.54	6.15
1991[2]	5.72												

[1] Annual weighted average by sales. [2] Preliminary. *Source: Statistical Reporting Service, U.S.D.A.* T.530

United States Potatoes Processed[1], Eight States In Thousands of Cwt.

States	Storage Season	to Dec. 1	to Jan. 1	to Feb. 1	to Mar. 1	to Apr. 1	to May 1	Entire Season
Idaho and Malheur Co., Oregon	1985–6	17,830	22,980	26,660	32,170	37,910	43,240	55,220
	1986–7	13,200	17,980	21,910	27,070	33,360	38,970	55,470
	1987–8	18,260	23,320	28,680	34,340	40,380	46,440	64,495
	1988–9	18,740	24,270	29,420	34,720	41,360	48,080	64,425
	1989–90	22,200	28,140	34,240	40,270	46,330	51,810	66,010
	1990–1	24,780	31,100	37,550				
	1991–2							
Maine[2]	1983–4	1,160	1,745	2,260	2,780	3,370	3,970	5,125
	1984–5	1,820	2,410	3,015	3,520	4,330	5,185	6,830
	1985–6	2,215	2,935	3,845	4,630	5,540	6,280	8,660
	1986–7	2,100	2,835	3,345	3,865	4,500	5,195	6,995
	1987–8	1,770	2,440	3,145	3,745	4,410	4,865	6,745
	1988–9	1,685	2,190	2,830	3,455	4,230	4,915	6,915
	1989–90	2,055	2,660	3,510	4,000	4,620	5,210	6,900
	1991–2	2,105	2,690	3,420				
	1990–1							
	1991–2							
Wash. and other areas, Oregon	1983–4	16,245	19,920	23,690	28,250	33,280	37,455	45,800
	1984–5	20,745	24,690	29,345	33,560	38,815	43,380	51,670
	1985–6	21,725	25,665	29,450	34,450	39,990	45,110	57,430
	1986–7	21,530	25,510	28,530	33,595	39,610	44,865	56,910
	1987–8	22,265	25,950	30,790	35,800	40,900	44,925	58,085
	1988–9	19,200	23,455	27,280	31,960	37,575	41,795	51,555
	1989–90	23,635	28,015	33,170	38,610	44,510	49,595	57,695
	1990–1	24,480	29,830	35,170				
	1991–2							
Other States[3]	1983–4	4,305	6,005	7,755	9,600	11,615	13,400	16,320
	1984–5	5,695	7,510	9,210	10,930	12,745	14,715	21,005
	1985–6	6,470	7,990	9,900	12,020	13,860	16,095	22,245
	1986–7	6,240	8,405	10,330	12,320	14,690	16,750	20,975
	1987–8	5,750	7,370	9,200	11,250	13,305	15,270	20,155
	1988–9	5,805	7,450	9,040	10,645	12,340	14,075	18,385
	1989–90	6,340	8,010	9,860	11,535	13,240	15,100	20,610
	1990–1	6,585	8,755	10,645				
	1991–2							
Total	1983–4	37,465	48,115	58,490	70,170	83,420	95,465	121,055
	1984–5	47,260	58,920	70,770	82,020	95,400	107,930	136,915
	1985–6	48,240	59,570	69,855	83,270	97,300	110,725	143,555
	1986–7	43,070	54,730	64,115	76,850	92,160	105,780	140,350
	1987–8	48,045	59,080	71,815	85,135	98,995	111,500	149,480
	1988–9	45,430	57,365	68,570	80,780	95,505	108,865	144,280
	1989–90	54,230	66,825	80,780	94,415	108,700	121,715	151,215
	1990–1	57,950	72,375	86,785				

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[1] Total quantity received and used for processing regardless of the state in which the potatoes were produced. Does not include quantities used for potato chips in Maine, Mich., Minn., N. Dak. or Wis. [2] Includes Maine grown potatoes only. [3] Mich., Minn., N. Dak. and Wis.
Source: Crop Reporting Board, U.S.D.A.

T.524a

Potatoes U.S. Total Per Capita Utilization In Pounds (Farm Weight)

Year	Total	Fresh	Freezing	Chips[2]	Dehydrating	Canning
1981	116.0	45.7	41.2	16.8	10.5	1.8
1982	114.4	46.8	38.4	17.2	10.1	1.9
1983	118.1	49.7	38.9	17.9	9.7	1.9
1984	122.1	48.8	43.4	18.1	10.0	1.8
1985	122.4	46.7	45.1	17.7	11.1	1.9
1986	125.7	49.4	45.8	18.2	10.5	1.8
1987	125.9	48.9	47.1	17.7	10.4	1.8
1988	123.2	51.4	42.6	17.3	10.0	1.9
1989[1]	126.2	49.8	46.1	17.8	10.5	2.0

[1] Preliminary. [2] Includes shoestrings. *Source: Economic Research Service, U.S.D.A.*

Rapeseed (Canola)

World rapeseed or canola production in 1990/91 was forecast by USDA at 24 million tonnes, 11 percent more than a year earlier. Rapeseed comprises close to 12 percent of world oilseed output.

China was forecast to harvest 6.6 million tonnes in 1990/91, 21 percent more than the previous season. Planted area and yields were both higher. Output in the EC was projected to rise by 20 percent to 5.92 million tonnes, because of increased acreage and higher yields. The major producers in the EC were France, Germany, and Britain. As a result of EC subsidies, canola production has continued to expand rapidly, and with the addition of East Germany's acreage, the EC was expected to be a more dominant producer. East Germany's crop averaged about 400,000 tonnes a year over the late 1980s.

India's output was expected to increase by 5 percent to four million tonnes, while Canada's crop of 3.3 million tonnes was up 6 percent. During 1989, Canada's production was hurt by hot, dry weather, but with adequate rains in 1990, yields rose by almost 17 percent.

Exports worldwide were forecast to fall by nearly 4 percent in 1990/91 to 4.15 million tonnes. Shipments by Canada, the largest exporter, were due to decline to 1.8 million tonnes from 2 million the previous year. Canadian sales to the U.S. fell because of competition from other low-priced sources.

The EC is a net importer of canola, most of which is crushed into meal and oil, with oil being a major export item. Eastern Europe is a net exporter of rapeseed, and Poland is a large seller. As rape oil becomes more widely accepted for human use, more countries are expected to purchase rapeseed. Japan and Mexico have been major buyers.

The global rapeseed crush was expected to rise by 9 percent to 23.3 million tonnes. The EC and China were major processors. World ending stocks were projected to be 1.12 million tonnes, 9 percent less than a year earlier.

World rape meal output in 1990/91 was forecast to expand by 9 percent to 13.5 million tonnes, with China and the EC the leading producers. Meal exports, which are fairly small since most countries consume their production, were projected at 2.6 million tonnes, slightly above a year earlier. World consumption of rape meal was forecast to rise by 10 percent to 13.4 million tonnes. The EC remained a major user of rape meal, and Eastern Europe's usage was around one million tonnes. World ending stocks of rape meal were put at 380,000 tonnes.

World rapeseed oil production was forecast to reach 8.22 million tonnes, 8 percent more than the year before. Rape oil was the fourth leading vegetable oil produced worldwide, with a market share of 14 percent. Output by the EC, the largest producer, was over two million tonnes. Low-erucic acid varieties of canola, fit for human consumption, are becoming the dominant types grown. EC processing subsidies favor these varieties. China, a major producer of rape oil, was still expected to import nearly 300,000 tonnes in 1990/91.

World trade in rape oil in 1990/91 was likely to reach 1.8 million tonnes, up 6 percent. The EC supplied over half of the export market, and Canada was a major exporter. The U.S. has emerged as an importer of canola oil, mainly from Canada. Canadian canola is the low-erucic acid variety.

The U.S. Food and Drug Administration approved canola oil for human use in 1985. U.S. canola acreage was around 125,000 in 1990/91 and was expected to expand, if prices are favorable and marketing channels improve. Canola's primary advantage is that it has the lowest level of saturated fats among the cooking oils.

World consumption of canola oil was expected to reach over 8 million tonnes in 1990/91, or 8 percent more than a year earlier.

Futures Markets

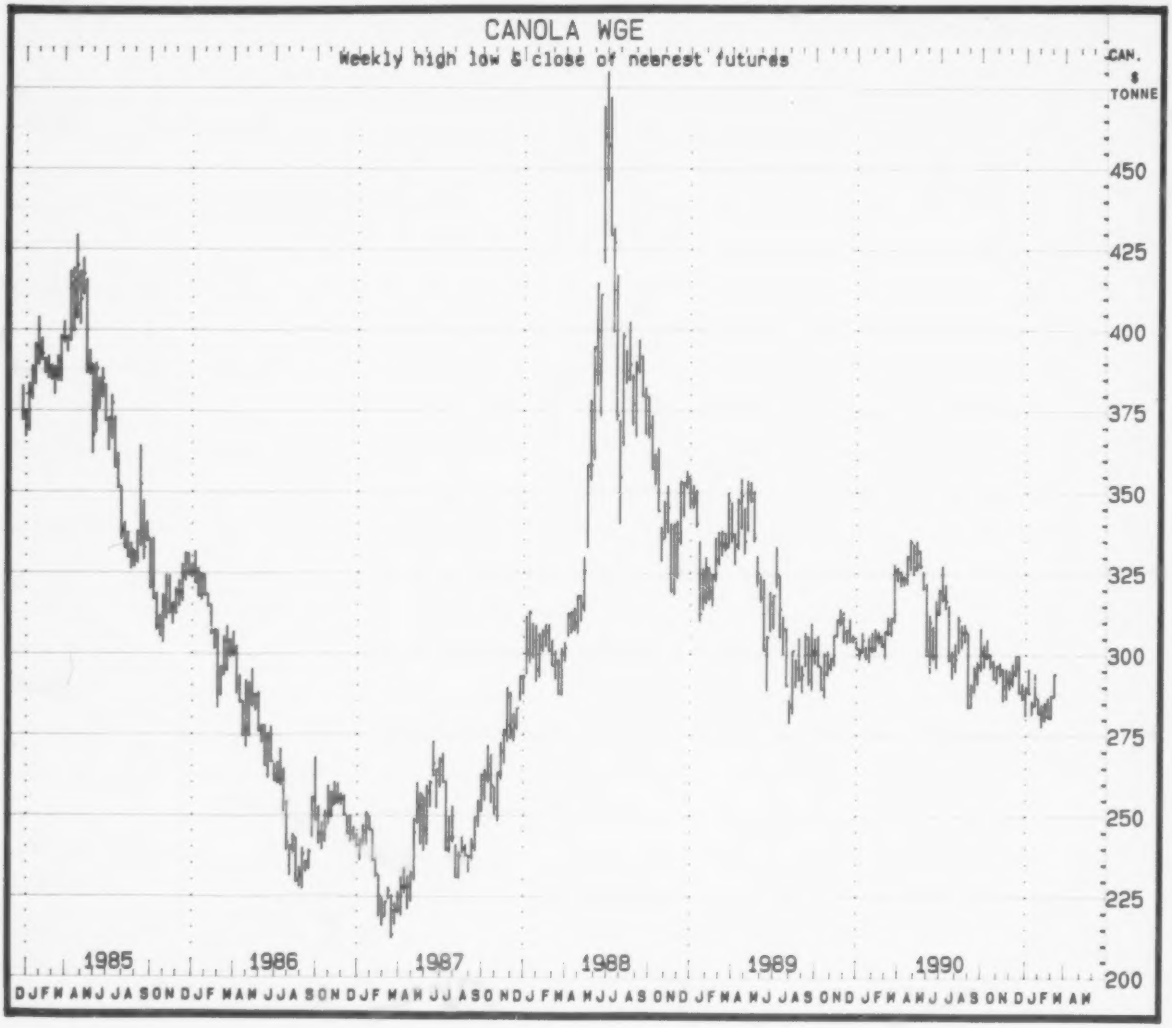
Canola futures are traded on the Winnipeg Commodity Exchange.

World Production of Rapeseed (In Thousands of Metric Tons)

Year[2]	Bangladesh	Canada	China	Czechoslovakia	Denmark	East Germany	France	India	Pakistan	Poland	Sweden	United Kingdom	U.S.S.R.	West Germany	Yugoslavia	World Total
1978	137	3,497	1,868	166	91	318	568	1,860	248	691	289	155		331	73	10,721
1979	118	3,411	2,402	80	150	201	510	1,428	247	233	264	198		321	93	10,808
1980	122	2,484	2,384	214	225	277	1,103	2,002	252	572	285	300		377	68	11,104
1981	123	1,849	4,065	200	290	284	990	2,382	238	496	282	325		363	65	12,345
1982	120	2,225	5,656	178	334	307	1,147	2,207	246	533	320	580		535	79	14,804
1983	131	2,609	4,287	314	309	260	906	2,608	217	554	318	565		599	103	14,259
1984	140	3,412	4,205	300	474	305	1,305	3,073	234	911	327	925		662	124	16,935
1985	261	3,498	5,607	285	544	381	1,340	2,681	250	1,073	320	895	74	803	126	18,699
1986	229	3,787	5,881	306	618	370	1,071	2,605	217	1,298	321	940	110	969	131	19,550
1987	222	3,847	6,605	337	556	400	2.645	3,455	204	1,192	250	1,353	296	1,265	88	23,435
1988	200	4,311	5,044	380	504	424	2,302	4,200	243	1,199	248	1,040	420	1,216	68	22,531
1989[1]	210	3,096	5,440	387	695	430	1,765	3,800	260	1,600	323	969	424	1,450	75	21,570
1990[3]		3,300	6,600			427	1,900	4,000		1,200			550	1,726		23,824

[1] Preliminary. [2] Harvest generally occurs in the first half of the calendar year given in all major producing countries except Canada.
[3] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.*

T.533



World Supply & Distribution of Rapeseed & Products In Thousands of Metric Tons

Crop Year	Rapeseed Pro-duction	Rapeseed Exports	Rapeseed Imports	Rapeseed Crush	Rapeseed Ending Stocks	Rapeseed Meal Pro-duction	Rapeseed Meal Exports	Rapeseed Meal Imports	Rapeseed Meal Con-sumption	Rapeseed Meal Ending Stocks	Rapeseed Oil Pro-duction	Rapeseed Oil Exports	Rapeseed Oil Imports	Rapeseed Oil Con-sumption	Rapeseed Oil Ending Stocks
1979–80	10,081	2,102	2,403	8,714	1,708	5,206	520	640	5,316	149	3,365	643	571	3,295	159
1980–81	11,104	2,305	2,366	10,477	1,489	6,297	808	636	6,075	199	3,933	814	756	3,914	210
1981–82	12,345	2,142	2,216	11,959	911	7,331	845	683	7,182	186	4,383	824	775	4,404	140
1982–83	14,804	2,469	2,540	13,826	740	8,449	768	871	8,500	238	4,991	841	790	4,925	155
1983–84	14,263	2,537	2,704	13,312	647	8,130	1,198	1,303	8,206	267	4,856	984	980	4,827	180
1984–85	16,935	3,153	3,291	15,369	1,033	9,419	1,463	1,451	9,454	220	5,602	1,298	1,199	5,497	186
1985–86	18,699	3,632	3,648	16,986	1,267	10,260	1,823	1,734	10,109	282	6,233	1,313	1,203	5,978	331
1986–87	19,550	4,577	4,927	18,428	1,037	11,115	1,692	2,230	11,576	359	6,851	1,652	1,402	6,545	387
1987–88	23,435	4,525	4,354	21,003	1,245	12,720	1,894	1,975	12,656	504	7,747	1,832	1,514	7,270	546
1988–89	22,531	4,232	4,489	20,434	1,710	12,347	2,528	2,393	12,286	430	7,593	1,867	1,548	7,268	552
1989–90[1]	21,570	4,314	4,481	20,466	1,226	12,364	2,536	2,255	12,094	419	7,578	1,704	1,499	7,448	477
1990–91[2]	23,824	4,050	4,404	22,244	1,118	13,440	2,558	2,452	13,374	379	8,218	1,729	1,587	8,106	447

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.*

T.534a

RAPESEED

Wholesale Price of Rapeseed Oil, Refined (Denatured), in Tanks at N.Y. In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1981	56.4	59.0	59.0	59.0	59.0	59.0	59.0	59.0	59.0	59.0	59.0	59.0	58.8
1982	57.0	55.0	56.8	57.5	56.0	56.0	56.0	56.0	55.7	55.3	55.3	55.3	50.0
1983	55.3	55.3	55.3	55.3	55.3	55.3	55.3	55.3	55.3	55.3	55.3	55.3	55.3
1984	55.3	55.3	55.3	55.3	55.5	55.5	55.2	55.2	55.2	55.2	55.2	55.2	55.3
1985	55.2	55.2	55.2	N.A.	N.A.	68.3	67.9	64.0	62.5	62.5	62.5	60.5	61.4
1986	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.5	60.5	60.5	60.5	60.1
1987	60.50	62.00	62.50	62.50	64.25	69.50	69.50	65.00	63.50	63.50	63.50	63.50	64.15
1988	63.56	63.50	63.50	63.50	63.50	63.50	63.50	63.50	63.50	64.63	66.25	70.00	64.37
1989	70.00	70.00	80.25	80.25	80.25	80.75	80.25	80.25	80.25	80.25	80.25	80.25	78.58
1990	81.75	82.25	82.23	82.25	82.25	82.25	82.25	82.25	79.25	77.25	77.25		

Source: Economic Research Service, U.S.D.A. T.534

Month–End Open Interest of Rapeseed Futures in Winnipeg In 20–Tonne Units

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981	17,615	15,959	17,138	18,427	18,377	16,241	15,338	14,386	15,666	16,359	16,602	13,658
1982	13,106	14,153	11,484	11,062	13,606	11,859	12,093	15,585	13,813	14,281	16,675	19,569
1983	16,950	16,989	17,401	17,857	16,398	13,786	15,755	20,715	21,315	18,888	17,639	18,063
1984	14,366	15,258	15,230	13,192	14,816	13,863	13,548	15,519	16,402	17,792	17,027	18,700
1985	19,122	22,206	21,260	22,202	19,611	17,591	17,675	19,058	16,757	14,511	14,717	17,232
1986	15,553	18,146	19,741	20,435	22,262	19,193	17,192	20,594	22,570	26,838	28,391	28,972
1987	25,143	32,141	34,152	31,564	30,761	28,903	26,599	24,083	25,075	25,893	23,049	26,576
1988	28,875	33,387	31,798	34,056	34,587	31,318	30,224	29,509	26,289	29,510	28,974	29,221
1989	22,435	20,889	18,591	22,690	24,587	21,025	22,280	22,027	16,153	21,556	20,981	21,749
1990	18,431	20,340	17,599	19,825	24,718	22,546	23,073	24,353	24,872	25,688	18,706	22,057
1991	22,000	22,794										

Source: Winnipeg Commodity Exchange T.535

High, Low & Closing Prices of June Rapeseed Futures in Winnipeg In Dollars per Tonne

Year of Delivery		Year Prior to Delivery									Delivery Year						Life of Delivery Range
		Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1983	High	—	—	—	—	361.0	366.3	345.5	349.1	340.0	335.9	329.0	321.0	329.3	328.1	308.5	366.3
	Low	—	—	—	—	346.0	332.0	332.6	339.6	322.3	323.1	311.5	311.8	311.0	309.5	292.8	292.8
	Close	—	—	—	—	354.2	337.0	342.5	340.3	325.6	329.1	311.7	316.0	324.7	309.9	297.2	—
1984	High	—	—	—	359.5	434.0	467.4	452.5	435.2	424.5	431.4	412.0	426.5	502.2	724.0	724.0	724.0
	Low	—	—	—	330.0	364.5	415.5	409.0	406.1	397.3	406.5	382.9	403.0	426.0	507.5	577.0	330.0
	Close	—	—	—	350.5	423.6	447.5	409.7	407.8	421.5	410.2	403.5	426.5	502.2	704.0	577.0	—
1985	High	—	—	—	443.9	434.5	417.5	424.1	427.9	417.5	408.8	404.5	402.5	429.2	422.0	389.7	443.9
	Low	—	—	—	409.5	413.5	406.5	414.9	415.3	389.8	388.0	395.5	391.4	393.2	361.5	379.0	361.5
	Close	—	—	—	413.0	413.7	416.5	417.7	416.8	390.5	397.4	397.4	397.5	408.6	367.0	381.9	—
1986	High	422.5	424.0	409.5	400.4	370.0	357.0	351.5	315.5	347.3	346.7	329.8	316.7	306.5	295.0	277.5	424.0
	Low	421.5	402.5	388.0	364.5	348.0	342.5	328.4	325.5	330.7	328.6	296.1	298.8	271.0	274.0	261.3	261.3
	Close	421.5	403.2	388.0	368.5	352.8	342.5	328.4	333.6	342.2	329.5	300.6	305.7	291.5	275.8	267.7	—
1987	High	—	—	—	290.7	270.0	284.0	277.0	278.0	269.4	260.5	253.7	234.0	233.4	259.9	272.7	290.7
	Low	—	—	—	290.2	254.0	255.0	258.5	266.8	256.5	251.0	224.1	216.0	218.8	229.1	240.7	216.0
	Close	—	—	—	270.2	258.6	279.8	270.8	268.6	258.1	253.8	226.1	221.5	229.7	245.0	265.7	—
1988	High	—	—	—	285.0	262.5	273.6	284.0	300.4	307.0	323.5	309.9	303.4	317.8	378.3	431.0	431.0
	Low	—	—	—	257.0	253.0	254.8	268.7	265.3	284.5	298.0	298.0	288.0	305.3	310.0	371.3	253.0
	Close	—	—	—	265.2	257.3	270.5	269.6	292.8	306.2	300.2	301.7	301.6	317.6	376.2	431.0	—
1989	High	339.0	402.4	490.0	480.0	426.0	424.0	392.7	376.5	367.5	367.0	345.6	351.0	354.0	353.3	323.0	490.0
	Low	322.2	338.0	397.0	380.0	393.5	387.5	355.5	339.3	344.5	323.8	323.6	334.5	327.5	316.2	288.7	288.7
	Close	339.0	397.0	470.0	391.0	407.5	389.5	364.5	345.8	362.5	336.5	345.2	336.3	334.5	318.5	307.0	—
1990	High	—	—	—	334.5	339.2	336.8	329.0	331.0	322.5	319.2	318.7	330.0	335.4	334.9	312.0	339.2
	Low	—	—	—	315.0	314.0	321.8	313.0	315.2	315.7	307.5	309.3	316.0	321.0	308.4	294.2	294.2
	Close	—	—	—	315.0	331.5	325.3	320.4	321.1	317.4	311.3	315.8	325.3	329.9	309.5	306.8	—
1991	High	—	—	—	347.0	344.0	335.0	332.5	323.5	316.3	302.5	294.5					
	Low	—	—	—	326.0	322.5	322.7	319.4	309.0	298.9	286.2	284.7					
	Close	—	—	—	332.5	322.5	327.8	321.8	313.0	299.0	290.6	292.4					

Source: Winnipeg Commodity Exchange T.536

Rayon and Other Synthetic Fibers

Worldwide Cellulosic Fiber Production In Thousands of Metric Tons

Year	Austria	Brazil	China	Finland	Germany East	Germany West	India	Japan	Poland	Romania	Taiwan	Un. Kingdom	United States	USSR	Yugoslavia	Total
1981	123.5	46.3	185.0	46.6	169.0	115.0	150.4	392.2	63.9	64.6	99.7	129.4	349.3	645.5	73.0	3,204
1982	114.6	45.0	185.0	53.1	161.8	111.5	101.4	379.3	64.4	58.2	92.8	113.2	264.6	634.9	68.0	2,946
1983	121.1	40.4	130.4	57.6	165.1	114.0	116.1	387.8	[illegible]	59.5	101.5	140.2	290.3	599.9	72.0	2,929
1984	123.8	46.7	153.0	58.0	170.2	116.0	141.8	377.4	75.5	59.5	128.0	127.2	285.1	602.0	69.0	2,996
1985	123.9	46.6	181.0	60.0	167.8	119.0	141.9	387.9	71.1	61.8	121.9	79.2	253.0	586.0	69.9	2,931
1986	123.0	50.4	183.0	55.0	157.7	119.0	140.0	320.0	72.0	64.0	119.9	58.0	280.7	589.0	71.1	2,860
1987	120.0	48.9	187.0	54.0	156.6	118.0	167.5	300.5	73.3	66.0	119.6	55.0	274.6	591.5	63.3	2,825
1988	132.0	51.5	173.0	60.4	155.1	122.0	174.1	290.6	74.2	75.6	125.8	64.0	278.3	601.0	68.0	2,887
1989[1]	136.0	55.0	180.0	64.8	170.3	129.0	178.0	273.0	61.1	70.6	147.6	55.0	263.3	584.0	71.1	2,874

[1] Preliminary. *Source: Textile Economics Bureau, Inc.* T.537

Worldwide Noncellulosic Fiber Production (Except Olefin) In Thousands of Metric Tons

Year	Brazil	China	France	W. Germany	India	Italy/Malta	Japan	Korea Rep.	Mexico	Romania	Spain	Taiwan	Un. Kingdom	United States	USSR	Total
1981	201.8	347.0	201.2	752.2	90.7	435.3	1,329	610.4	244.0	154.0	241.2	587.0	[illegible]	3,276	572.8	10,827
1982	198.1	384.0	190.1	669.0	106.2	428.7	1,302	612.5	232.5	153.0	231.4	630.9	[illegible]	2,602	587.8	10,145
1983	185.3	386.2	192.2	732.2	128.0	458.6	1,318	664.1	269.5	153.0	247.8	[illegible]	223.8	3,009	622.0	11,076
1984	215.8	559.4	191.7	731.0	162.3	527.8	1,369	746.5	300.2	174.4	260.4	871.8	240.0	2,937	658.3	11,805
1985	217.5	732.0	182.7	762.0	193.7	563.6	1,403	811.6	305.9	196.8	274.9	1,024	242.7	2,864	712.8	12,489
1986	237.0	747.4	167.2	745.0	220.7	576.9	1,356	862.4	296.3	199.7	276.2	1,232	208.2	2,919	757.8	12,939
1987	248.1	846.0	161.0	759.3	266.0	564.6	1,341	970.1	333.2	201.9	268.5	1,391	203.0	3,094	868.8	13,745
1988	239.7	1,074	174.8	751.1	321.6	564.2	1,352	1,115	345.9	203.0	265.4	1,430	193.5	3,147	868.8	14,363
1989[1]	246.4	1,175	165.0	775.0	342.5	540.0	[illegible]	1,190	336.2	203.8	255.0	1,523	185.0	3,119	890.2	14,717

[1] Preliminary. *Source: Textile Economics Bureau, Inc.* T.538

World Production of Rayon & Other Synthetic Fibers In Thousands of Metric Tons

	Noncellulosic Fiber Production (Except Olefin)							Glass Fiber Production								
	By Fibers				World Total											
Year	Acrylic & Mod-Acrylic	Nylon & Aramid	Polyester	Other Fibers[3]	Yarn & Monofilaments	Staple & Tow & Fiberfil	Total	Europe[3]	United States	Other Americas	Japan	Other[4]	This Total	P.R.C. China	USSR	Cigarette Tow Production
1981	2,090	3,139	5,465	133	4,809	6,018	10,827	277	472	31	174	14	968	N.A.	N.A.	349
1982	2,058	2,853	5,106	129	4,480	5,666	10,146	250	408	35	198	12	903	30	65	339
1983	2,221	3,196	5,535	124	4,867	6,209	11,076	290	530	37	206	14	1,077	30	65	334
1984	2,276	3,354	6,029	145	5,224	6,580	11,804	300	632	39	249	14	1,234	40	75	314
1985	2,381	3,442	6,502	164	5,578	6,911	12,489	320	610	32	273	28	1,263	50	85	337
1986	2,446	3,497	6,858	140	5,694	7,247	12,941	364	630	35	240	30	1,299	50	100	362
1987	2,525	3,630	7,445	144	6,040	7,704	13,744	407	725	50	300	35	1,517	55	110	400
1988	2,444	3,727	8,054	138	6,542	7,821	14,363	465	730	65	340	55	1,655	65	125	422
1989[1]	2,352	3,789	8,431	145	6,719	7,998	14,717	470	735	65	345	65	1,680	70	133	447

[1] Preliminary. [2] Alginate, Azion, Spandex, Saran, etc. [3] West & East (excluding USSR). [4] Except USSR & China (P.R.C.)
Source: Textile Economics Bureau, Inc. T.539

Man-Made Fiber Production in the United States In Millions of Pounds

	Rayon & Acetate								Non-Cellulosic Fiber						Producers' Waste Shipments	
	Rayon Yarn				Staple & Tow											
Year	Indust.	Textile	Acet. Yarn	Total Yarn	Rayon	Acetate	Total	Total	Yarn	Staple	Total	Total Ray. & Acet. & Non-Cel.	Textile Glass Fiber	Total Man-made Fiber	Rayon	Non-Cell.
1981	33.4	15.1	257.0	305.5	460.6	4.0	464.6	770.1	3,814.8	4,191.1	8,005.9	8,776.0	1,041.1	9,817.1	15.3	174.2
1982	20.8	12.4	195.2	228.4	355.0	1.0	356.0	584.4	3,057.4	3,402.5	6,459.9	7,044.3	899.2	7,943.5	10.7	173.2
1983	25.0	11.2	227.6	263.8	374.8	1.4	376.2	640.0	3,568.0	3,971.0	7,538	8,178	1,167.2	9,335.9	9.4	214.1
1984	28.8	12.1	198.2	239.1	389.2	.4	389.6	628.7	3,524	3,947	7,472	8,100	1,394.0	9,494	11.4	216.9
1985	N.A.			204.6	352.7	.5	353.2	557.8	3,790	3,773	7,564	8,121	N.A.		8.8	260.2
1986	N.A.			214.8	403.7	.5	404.2	619.0	3,836	3,992	7,828	8,447	N.A.		10.4	261.5
1987	N.A.			191.1	413.8	.5	414.3	605.4	4,010	4,306	8,316	8,921	N.A.		9.6	239.1
1988	N.A.			213.9	399.8	N.A.	399.8	613.7	4,180	4,346	8,526	9,140	N.A.		7.8	244.8
1989[1]	N.A.			217.5	362.8	N.A.	362.8	580.3	4,225	4,290	8,516	9,096	N.A.		6.0	188.5

[1] Preliminary. *Source: Textile Organon* T.543

RAYON AND OTHER SYNTHETIC FIBERS

U.S. Rayon and Acetate Distribution In Millions of Pounds

	Yarn & Monofilaments								Staple & Tow & Fiber Fill						
	Producers' Shipments								Producers' Shipments						
	To Domestic Consumers								Domestic Consumers						
Year	Industrial	Textile	Acetate	Total	Export	Total	Import	Domestic Consump.	Rayon	Acetate	Total	Export	Total	Import	Domestic Consump.
1982	—— 30.1 ——		169.0	199.1	29.8	228.9	7.0	206.1	293.7	1.0	294.7	66.5	361.2	13.4	308.1
1983	—— 35.5 ——		197.6	233.1	28.2	261.3	8.7	241.8	333.5	1.4	334.9	[illegible]	378.8	13.6	348.5
1984	—— 38.2 ——		180.1	218.3	18.2	236.5	10.0	228.3	331.9	.4	332.3	32.1	384.4	17.0	349.3
1985	—— N.A. ——			187.1	23.0	210.1	13.9	201.0	323.7	.5	324.2	35.0	359.2	12.3	336.5
1986	—— N.A. ——			192.1	20.2	212.3	17.0	209.1	373.0	.5	373.5	30.8	404.3	17.4	390.9
1987	—— N.A. ——			166.8	24.9	191.7	12.8	179.6	383.1	.5	383.6	32.4	416.0	13.8	397.4
1988	—— N.A. ——			182.6	34.1	216.7	17.6	200.2	386.0	N.A.	386.0	20.5	406.5	20.4	406.4
1989[1]	—— N.A. ——			187.3	31.7	219.0	25.4	212.7	338.2		338.2	16.2	354.4	54.0	392.2

[1] Preliminary. *Source: Textile Organon*

T.540

U.S. Domestic Shipments of Synthetic Fibers In Millions of Pounds

	Yarn & Monofilaments							Staple & Tow						
	Cellulosic			Non-Cellulosic					Non-Cellulosic					
Year	Rayon	Acetate	Total	Nylon	Olefin[2]	Polyester & Other	Total[3]	Cell-ulosic Rayon	Nylon	Acrylic & Mod-Acrylic	Olefin & Vinyon	Polyester	Total	Textile Glass Fiber
1982	30.1	169.0	199.1	1,166	577.0	1,135	2,894	293.7	673.3	457.9	138.9	1,768	3,038	904.4
1983	35.5	197.6	233.1	1,392	698.6	1,294	3,385	333.5	897.1	492.2	183.4	2,099	3,672	1,184
1984	38.2	180.1	218.3	1,438	725.6	1,145	3,309	331.9	814.4	446.7	240.9	1,992	3,494	1,309
1985	—N.A.—		187.1	1,417	937.6	1,204	3,559	323.7	830.3	458.7	279.7	1,873	3,441	1,260
1986	—N.A.—		192.1	1,480	1,049	1,092	3,621	373.0	894.9	531.2	312.7	1,999	3,737	1,339
1987	—N.A.—		166.8	1,554	1,136	1,113	3,803	383.1	966.0	479.3	341.1	2,201	3,987	1,513
1988	—N.A.—		182.6	1,572	1,200	1,157	3,930	386.0	944.9	421.1	344.2	2,312	4,022	1,588
1989[1]	—N.A.—		187.3	1,575	1,226	1,111	3,912		955.3	414.8	363.4	2,261	3,995	1,554

[1] Preliminary. [2] Includes film fiber. [3] Includes Saran & Spandex. *Source: Textile Organon*

T.541

U.S. Mill Consumption of Fiber & Products & Per Capita Consumption

	Mill Consumption (Million Pounds)											Per Capita[4] Mill Consumption (Pounds)				
Year	Yarn & Monofilaments	Staple & Tow	Total R. & A.[2]	Noncellulosic Fiber	Textile Fiber Glass (Shipments)	Producers Waste (Shipments)	Total Man-made[3]	Cotton	Wool	Silk	Grand Total	Non-cell. Man-made Fibers	Rayon & Acetate	Cotton	Wool	Total All Fibers
1982	206.1	308.1	514.2	6,131	904.4	183.9	6,654	2,479	129.5	2.0	9,264	26.9	2.2	13.5	.9	40.5
1983	241.8	348.5	590.3	7,396	1,184	223.5	7,995	2,796	162.5	1.6	10,954	32.4	2.5	15.9	1.2	47.5
1984	228.3	349.3	577.6	7,202	1,309	228.3	7,790	2,668	163.2	1.4	10,622	31.2	2.4	11.5	.6	45.7
1985	201.0	336.5	537.5	7,490	1,260	269.0	8,036	2,796	134.7	1.5	10,968	31.9	2.3	11.8	.5	46.6
1986	209.1	390.9	600.0	7,846	1,339	271.9	8,454	3,302	164.5	1.0	11,921	— 35.8 —		13.5	.6	49.9
1987	179.6	397.4	577.0	8,276	1,513	248.7	8,862	3,737	167.6	1.0	12,767	— 37.2 —		15.4	.6	53.1
1988	200.2	406.4	606.6	8,405	1,588	252.6	9,017	3,470	156.1	1.0	12,645	— 37.4 —		14.2	.5	52.4
1989[1]	212.7	392.2	604.9	8,377	1,554	194.5	8,976	3,937	153.9	1.0	13,068	— 36.9 —		16.3	.5	53.7
1990[1]												— 35.6 —		16.3	.5	52.4

[1] Preliminary. [2] Rayon and acetate. [3] Man-made fiber data include only glass fiber for textile end uses. [4] Mill consumption adjusted for raw fiber equivalent of net U.S. trade in textile mfg. *Source: Textile Economics Bureau; Economic Research Service, U.S.D.A.*

T.542

Producer Price Index of Gray Synthetic Broadwovens (1982 = 100)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1985	104.0	103.1	102.5	102.3	103.0	102.4	101.9	101.7	101.8	102.0	102.3	102.4	102.5
1986	102.4	102.5	102.5	103.0	102.4	102.6	102.7	101.5	100.3	101.0	100.9	101.0	101.9
1987	101.9	101.9	102.2	103.4	103.9	105.3	106.4	106.9	107.9	108.6	109.0	109.2	105.6
1988	110.0	111.1	111.6	111.8	112.2	113.0	113.4	113.8	113.0	113.5	113.9	114.6	112.7
1989	114.3	112.0	112.2	112.2	112.1	113.1	114.7	115.0	115.0	115.8	115.9	115.3	114.0
1990[1]	115.6	115.7	115.6	115.7	115.5	115.6	115.7	115.2	116.2	115.6	115.4	116.1	115.7

[1] Preliminary. *Source: Bureau of Labor Statistics. (0337-03)*

T.545

Rice

World rough rice production in 1990/91 was placed at a record 511 million tonnes. With the exception of the mid-1980s when rough production stalled near 468 million tonnes, world output has trended steadily higher and has about doubled since the mid-1960s. The trend reflects hefty increases in harvested acreage and yield. Since the mid-1980s, harvested area has averaged around 145 million hectares, while average yield reached a record 3.5 tonnes per hectare in 1990/91.

Utilization has shown a jagged uptrend, rising to a record 342 million tonnes worldwide in 1990/91 from around 320 million in the mid-1980s.

Most of the world's rice is produced in Asia, primarily in China and India, with the former accounting for more than a third of world output. Indonesia is Asia's third largest producer. The strength of the monsoons is a major determinant in the size of the crop in many Asian nations. Asia consumes most of its production and accounts for about 90 percent of world rice consumption. Outside of Asia, Brazil is the largest producer with a crop of about 10 million tonnes in 1990/91, followed by the U.S. with 7.2 million.

Thailand is the largest exporter, but in 1990 Vietnam cut into Thailand's market share by selling rice at reduced prices. At the same time, the Thai government began buying domestic rice at above market prices, boosting Thai stocks to burdensome levels. Thailand was expected to compete aggressively in 1991 to regain market share. With competition among Asian producers, world rice prices were likely to be on the defensive in 1991. The U.S. is the world's second largest rice exporter.

Iran and Eastern Europe are leading rice importers. In 1990, Mideast imports were disrupted by the embargo against Iraq. Before that, Iran's imports were generally over 500,000 tonnes a year.

U.S. rough rice production in 1990/91 was 154.4 million cwt., about the same as in 1989/90. Long-grain rice accounted for 106 million cwt. in 1990/91, versus 109.5 million the previous season, and medium/short grain rice totaled 48.6 million, above 45 million in 1989/90. Total domestic use of 89 million cwt. in 1990/91 was up from about 82 million the previous season, while exports of 73 million cwt. compared with 76.8 million a year earlier.

The decline in long-grain rice output reflected reduced acreage in all six producing states, while medium-grain acreage rose in California and Louisiana, offsetting a decline in Arkansas. Much of the acreage reduction was due to increased participation in USDA's 50/92 program.

Futures Market

Rough rice futures are traded on the Chicago Rice and Cotton Exchange.

World Rice[3] Supply & Distribution In Millions of Metric Tons

	Production			Exports			Imports			Utilization			Stocks (End)		
Year	U.S.	Non-U.S.	Total	U.S.	Non-U.S.	Total	EC-12	Iran	Total	U.S.	Non-U.S.	Total	U.S.	Non-U.S.	Total
1987	6.0	462.2	468.2	2.4	10.5	12.9	1.2	1.0	12.9	2.5	320.3	322.8	1.7	49.2	50.9
1988	5.9	455.5	461.4	2.2	9.7	11.9	1.2	.4	11.9	2.6	317.1	319.7	1.0	44.0	45.0
1989	7.3	480.4	487.7	3.0	12.1	15.1	1.2	1.0	15.1	2.7	325.5	328.1	.9	46.2	47.4
1990[1]	7.0	497.5	504.5	2.4	10.0	12.4	1.2	.9	12.4	2.7	332.3	335.0	.9	52.1	53.0
1991[2]	7.2	503.8	511.0	2.4	10.9	13.0	1.1	1.0	13.0	2.8	338.4	341.3	.9	53.0	53.9

[1] Preliminary. [2] Forecast. [3] Production is on rough basis; the rest are on milled basis. *Source: Foreign Agricultural Service, U.S.D.A.* T.547a

World Production of Rough Rice In Millions of Metric Tons

Crop Year	Brazil	Burma	China	Egypt	Vietnam	India	Japan	Indonesia	Rep. of Korea	Bangladesh	Philippines	Pakistan	Taiwan	Thailand	United States	World Total
1986–7	10.6	11.8	172.2	2.7	15.4	90.6	14.6	39.0	7.9	23.1	9.0	5.2	2.5	18.9	6.0	468.5
1987–8	11.8	11.4	173.9	2.3	14.6	85.3	13.3	41.5	7.6	23.1	8.5	4.9	2.4	18.0	5.9	462.7
1988–9	11.0	12.5	169.1	2.1	16.8	106.0	12.4	42.3	8.4	23.3	9.2	4.8	2.3	21.1	7.3	487.7
1989–90[1]	7.9	13.5	180.1		18.0	105.0	12.9	44.8	8.2	27.0	8.9	4.8		20.8	7.0	504.5
1990–1[2]	9.8	14.0	182.0		17.5	109.5	12.9	44.3	7.6	26.3	9.6	5.3		20.0	7.2	511.0

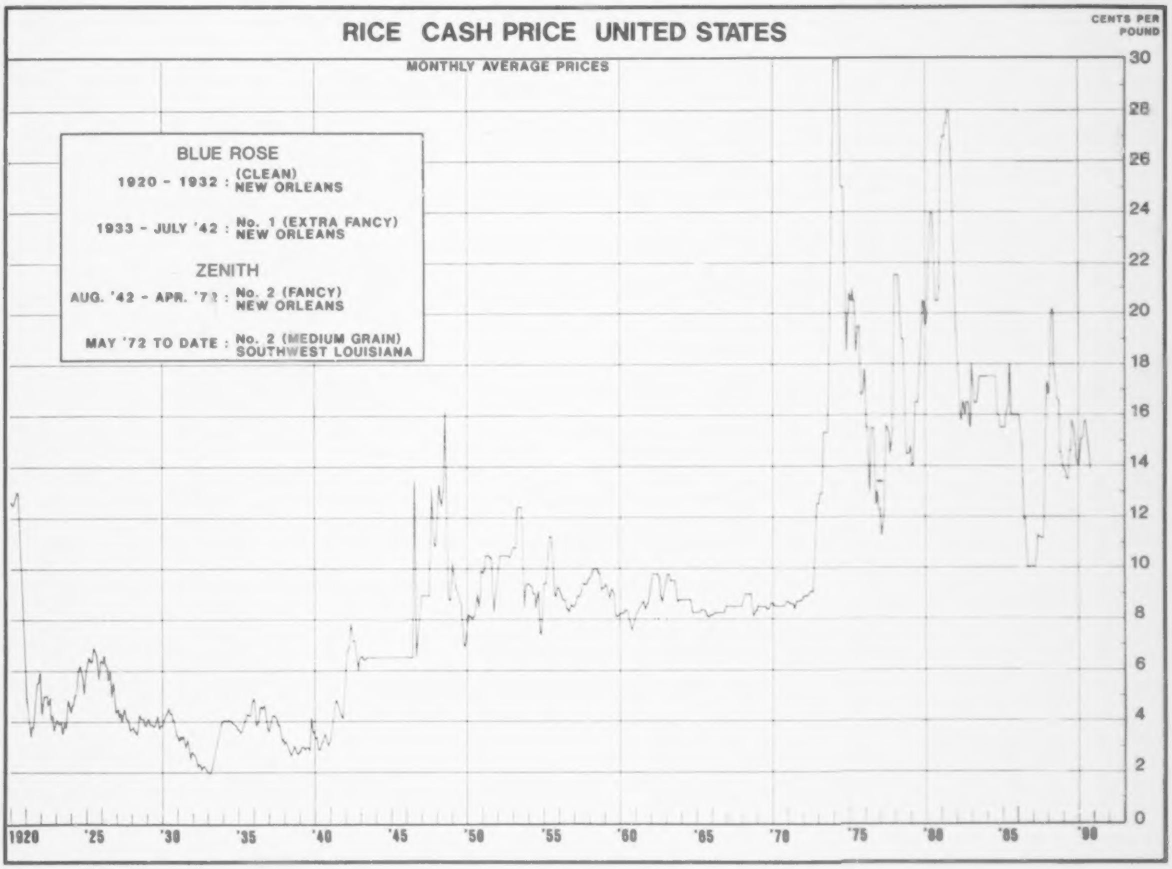
[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.547

World Exports of Rice (Milled Basis), by Country of Origin In Thousands of Metric Tons

Year	Australia	Argentina	Guyana	Burma	P.R. China	Egypt (U.A.R.)	Uruguay	Pakistan	EC-12	Indonesia	India	Taiwan	Thailand	United States	Vietnam	World Total
1987	338	150	69	493	1,020	105	190	1,226	981	100	350	240	4,355	2,444	153	12,928
1988	417	160	56	368	698	108	244	950	920	0	200	104	4,791	2,247	97	11,930
1989[1]	450	130	26	456	320	100	251	779	963	104	400	68	6,037	2,973	1,400	15,051
1990[2]	470	70	30	200	300	100	200	850	974	50	400	50	3.800	2,400	2,000	12,447
1991[3]	470	120	30	400	300	100	150	1,000	991	0	400	100	4,500	2,400	1,700	13,166

[1] Preliminary. [2] Estimate. [3] Projected. *Source: Foreign Agricultural Service, U.S.D.A.* T.552

RICE



Average Wholesale Price of Rice No. 2 (Medium)[1] Southwest Louisiana Dollars per cwt. bagged

Year	Aug.	Sept.	Oct.	Nov	Dec.	[illegible]	Feb.	Mar.	Apr.	May	June	July	Average
1980–1	20.5	20.8	21.6	24.4	26.4	27.0	27.1	27.5	27.6	28.0	28.0	27.8	25.6
1981–2	26.4	24.2	22.9	21.2	20.0	18.8	17.8	16.1	16.0	16.4	16.2	16.0	19.3
1982–3	16.5	16.5	16.5	16.7	17.8	17.3	16.5	16.5	16.5	17.1	17.5	17.5	16.9
1983–4	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
1984–5	16.0	16.0	15.5	15.5	15.5	15.5	15.5	16.0	16.2	16.3	18.0	16.2	16.0
1985–6	16.00	16.00	16.00	16.00	16.00	16.00	15.70	15.50	14.60	11.90	12.00	11.35	14.75
1986–7	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.50	11.25	11.15	11.20	11.20	10.45
1987–8	11.10	11.95	16.60	17.25	16.75	18.50	19.80	20.15	20.00	18.00	17.40	16.70	17.00
1988–9	16.40	16.20	14.50	14.50	14.00	13.90	13.75	13.50	13.50	14.60	14.65	15.75	14.60
1989–90[2]	15.55	15.30	14.80	14.30	14.04	14.80	15.13	15.13	15.50	15.75	15.65	15.30	15.10
1990–1[2]	14.75	13.90											

[1] U.S. No. 2—Broken not to exceed 4%. [2] Preliminary. *Source: Bureau of Labor Statistics* (0213–0101) T.549

U.S. Rice (Rough) Production by Type and Variety In Thousands of Cwt.

Year	Long Grain	Medium Grain	Short Grain	Total	Year	Long Grain	Medium Grain	Short Grain	Total
1985	100,367	28,464	6,082	134,913	988	119,364	36,891	3,642	159,897
1986	96,773	32,239	4,344	133,356	1989	109,541	41,126	3,820	154,487
1987	88,995	37,651	2,957	129,603	1990[1]	108,840	47,954	1,280	158,074

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.548

Salient Statistics of Rice, Rough & Milled (Rough Equivalent) in the United States In Millions of Cwt.

Year Beginning August	Supply				Disappearance								Government Support Program					
					Domestic										Loan Rate ($ CWT.)			
															Rough			
	Stocks Aug. 1	Production	Imports[2]	Total Supply	Food[3]	Brewers	Seed	Total	Exports	Residual	Total Disappearance	Owned By CCC July 31	Put Under Price Support	Long	Med & Short	Milled Long	All Classes
1984–5	46.9	138.8	.6	187.3	35.8	13.9	2.8	52.5	62.1	8.0	122.6	44.3	57.8	8.71	6.66	14.96	8.00
1985–6	64.7	134.9	2.2	201.8	45.6	14.1	2.6	62.3	58.7	3.5	124.5	43.6	74.7	8.68	6.49	14.53	8.00
1986–7	77.3	133.4	2.6	213.3	53.1	15.0	2.6	70.7	84.2	7.0	161.9	8.7	132.3	7.52	6.40	12.44	7.20
1987–8	51.4	129.6	3.0	184.0	55.3	15.4	3.2	73.9	72.2	6.5	152.6	.1	125.7	7.03	6.47	11.36	6.84
1988–9	31.4	159.9	3.7	195.0	57.7	15.6	3.0	76.3	85.9	6.0	168.2	0	147.7	6.75	6.16	10.89	6.63
1989–90[1]	26.7	154.5	4.2	185.4	60.7	15.5	3.2	79.4	76.8	3.0	159.2	0		6.68	6.06	10.81	6.50
1990–1[4]	26.3	158.1	4.8	189.1	65.0	15.6	3.2	83.8	74.0	5.0	162.8	0		6.68	6.17	10.84	6.50

[1] Preliminary. [2] Consists mostly of broken rice. [3] Includes shipments to territories and military food use. [4] Projected. *Source: Economic Research Service, U.S.D.A.* T.551

Acreage, Yield, Production, and Prices of Rice in the United States

Crop Year	Acreage Harvested (1,000 Acres)			Yield Per Harvested Acre (In Lbs.)		Production 1,000 Cwt.			Farm Value of Production $1,000	Wholesale Prices ($ Per Cwt.)		$ Per Tonne Milled Rice Average C.I.F. At Rotterdam		
	Southern States	California	United States	California	United States	Southern States	California	United States		Arkansas[2]	Houston[3]	U.S. No. 2[4]	Thai "A"[5]	Thai "B"[5]
1984–5	2,352	450	2,802	7,120	4,954	106,750	32,060	138,810	1,119,373	16.25	18.70	495	300	267
1985–6	2,102	390	2,492	7,300	5,414	106,445	28,468	134,913	893,377	15.20	16.85	418	276	236
1986–7	2,000	360	2,360	7,700	5,651	105,629	27,727	133,356	495,505	12.20	11.60	260	279	232
1987–8	1,963	370	2,333	7,550	5,555	101,668	27,935	129,603	917,167	17.80	19.85	408	359	318
1988–9	2,475	425	2,900	7,020	5,514	130,252	29,645	159,897	1,068,965	15.45	15.55	312	382	337
1989–90[1]	2,277	410	2,687	7,900	5,749	122,097	32,390	154,487	1,055,889	15.75	16.20	338	397	336
1990–1[1]	2,423	385	2,808	7,700	5,629	128,429	29,645	158,074	1,149,000					

[1] Preliminary. [2] F.O.B. mills, Arkansas, medium. [3] Houston, Texas (long grain). [4] Milled, 4%, Bagged. [5] SWR 100% Bagged. *Source: Economic Research Service, U.S.D.A.* T.550

U.S. Exports of Milled Rice[1] by Country of Destination In Thousands of Metric Tons

Year Beg. Aug.	Bangladesh	Belg.-Lux.	Canada	Haiti	Indonesia	Iraq	Jamaica	Liberia	Netherlands	Saudi Arabia	Senegal	South Africa	Switzerland	United Kingd.	W. Germany	Total Exports
1983–4	55.7	135.3	94.1	5.3	81.6	274.8	49.9	83.5	39.1	285.7	11.4	154.5	65.1	4.2	17.1	1,644
1984–5	80.3	133.1	97.6	3.8	3.0	380.4	53.3	52.5	30.2	240.8	59.1	83.6	55.4	9.4	17.1	1,961
1985–6	0	94.4	82.9	11.5	2.0	455.8	36.8	81.1	18.7	174.3	91.6	61.4	41.3	15.4	13.0	1,881
1986–7	89.7	116.2	63.6	80.3	.4	527.4	55.8	76.3	91.5	214.8	24.9	88.9	68.6	28.0	35.7	2,719
1987–8[2]	85.3	112.8	82.6	60.6	3.6	433.2	51.2	72.5	55.0	220.0	120.2	93.9	74.1	16.9	21.7	2,291

[1] No adjustment of brown & parboiled rice has been made; treated as milled rice. [2] Preliminary. *Source: Bureau of the Census, Dept. of Commerce* T.553

Exports of Rice from the United States In Thousands of Metric Tons[2]

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Total
1985–6	380	489	417	290	283	277	163	249	208	212	450	603	4,021
1986–7	778	835	565	446	323	343	411	365	399	560	254	582	5,861
1987–8[2]	215	199	252	235	158	186	136	186	151	220	126	169	2,233
1988–9	114	163	235	238	274	231	212	308	206	345	201	270	2,797
1989–90	178	273	279	261	260								

[1] 162 pounds rough—100 pounds clean. [2] Prior to 1987–8 data are in millions of pounds[1] (clean basis). *Source: Department of Commerce* T.554

Average Price Received by Farmers for Rice (Rough) in the U.S. In Dollars Per 100 Pounds (Cwt.)

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average[1]
1985–6	7.86	7.55	7.73	7.84	7.71	7.90	7.86	7.60	5.32	4.52	4.04	3.86	6.53
1986–7	4.02	3.86	3.83	3.90	3.74	3.55	3.84	3.62	3.63	3.71	3.62	3.49	3.75
1987–8	3.82	4.34	6.25	7.53	7.64	7.93	9.37	9.22	8.92	7.97	7.69	7.94	7.27
1988–9	7.49	6.97	6.85	6.81	6.68	6.58	6.67	6.60	6.74	6.78	7.05	7.45	6.83
1989–90[2]	7.42	7.59	7.37	6.94	6.95	7.40	7.52	7.50	7.31	7.21	7.08	6.95	7.27
1990–1[2]	6.64	6.25	6.34										

[1] Weighted average by sales. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.555

Rubber

World rubber production, including natural and synthetic, trended steadily higher during the 1980s, with both reaching records in 1989. Some slippage in production was forecast in 1990, while consumption was expected to trend a little higher. A draw on world stocks of about 265,000 tons was projected.

Malaysia is the largest natural rubber producer, at times accounting for almost a third of world output. World natural rubber production reached about 5.13 million tonnes in 1989, with Malaysia accounting for 1.4 million, Indonesia for 1.3 million, and Thailand for 1.2 million. Indonesia has a large area in rubber plantations, but average yield is only about 400 kg./hectare, compared with 1,200 kg. in Malaysia.

In 1990, natural production worldwide was estimated at 5.1 million tonnes, with Thai output during the first few months of the year running well ahead of the year-earlier pace, while offtake was lagging in Malaysia and Indonesia.

World synthetic production was diversified and totaled 10.3 million tonnes in 1989, of which the U.S. accounted for 2.3 million, the EC about 2 million, and Eastern Europe 3 million. During the 1980s, synthetic rubber output in Eastern Europe, the USSR, and China grew steadily. How the rapid changes in Eastern Europe in 1990 would impact rubber production remained to be seen.

World rubber consumption outpaced production during the second half of 1980s. Natural rubber use grew quickly from a 1985 total of 4.35 million tonnes to 5.34 million in 1989. Synthetic rubber use went from 8.95 million tonnes to 10.42 million during the period.

The U.S. is the largest consumer of both natural and synthetic rubber, taking about 25 percent of the world total (3 million tonnes in 1989 out of world use of 15.7 million). Synthetic rubber accounted for 73 percent of U.S. rubber use in the mid-1980s, but declined to just over 70 percent in 1989 to the benefit of natural rubber. Indonesia is the largest supplier of natural rubber to the U.S.

In Eastern Europe, synthetic rubber comprises about 90 percent of rubber use, while in Western Europe, synthetic accounts for 65 percent. Japan is a major rubber consumer, and about 62 percent of its use is synthetic rubber. For the world as a whole, synthetic rubber accounted for about 66 percent of total consumption at the end of the 1980s. Estimates for 1990 placed natural rubber consumption at 5.54 million tonnes, versus 5.34 million in 1989, while synthetic was put at 10.73 million, above 10.42 million the year before. However, these estimates could prove a little on the high side.

Natural rubber use is generally separated into tires and general rubber products (GRP). In the 1980s, an increasing amount of natural rubber went into tires to meet growing demand for radials, which require more natural rubber than bias-ply tires do. Any economic slowdown that effects car sales hurts demand for rubber, as was the case from late 1989 through 1990. In 1989, the New York average price for natural rubber (ribbed, smoked sheets) was $1,111.80 per tonne, below the 1988 average of $1,286.60. In the summer of 1990, the New York average price was running below year-earlier levels. Synthetic prices, however, held up better, buoyed by higher oil prices in 1990.

It takes about eight gallons of oil to make enough synthetic rubber to produce one regular motor tire in a mixture with natural rubber. More oil is needed for heavier and complex tires. The U.S. military uses a large number of rubber tires for jets and other vehicles, and the Persian Gulf war was expected to boost tire use.

Owing partly to the Mideast crisis, the U.S. government in 1990 opted to increase its rubber stockpile, setting a goal of over 800,000 tonnes, which was unlikely to be reached. The U.S. Defense Logistic Agency (DLA) purchased some 18,000 tonnes of natural rubber in the summer of 1990. U.S. stockpile needs helped to brake the downward pressure on natural rubber prices in 1990. Natural rubber producing nations have an International Rubber Agreement, which attempts to stabilize prices with a buffer stock and a reference price.

Futures Markets

Rubber futures are traded in Kuala Lumpur, Tokyo and Singapore. Futures trading was inaugurated in London in mid-1990 on the London Futures and Options Exchange (FOX).

U.S. Imports of Natural Rubber (Includes Latex & Guayule) In Thousands of Metric Tons[3]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept	Oct.	Nov.	Dec.	Total[1]
1982	50.99	59.33	45.71	53.86	56.19	63.39	38.67	54.35	40.60	54.36	51.37	49.45	618.3
1983	33.01	49.63	48.54	62.11	63.44	65.20	50.41	31.90	44.22	67.83	71.06	54.71	642.1
1984	87.84	57.82	75.45	69.18	70.25	41.45	73.81	56.23	67.46	61.95	62.36	62.21	786.0
1985[3]	72.8	72.8	89.5	65.0	86.0	48.9	60.9	46.0	41.4	70.6	73.0	65.5	792.3
1986	66.7	71.5	77.9	84.5	48.4	54.9	70.1	45.2	63.9	73.5	54.0	56.7	765.0
1987	55.9	91.3	82.0	33.3	64.6	58.9	64.2	47.6	59.4	57.7	63.9	78.9	757.6
1988	83.2	69.6	87.0	68.6	67.2	64.9	49.5	83.3	59.1	69.3	77.4	74.7	853.8
1989[2]	99.3	52.2	99.1	74.6	87.5	63.8	77.9	65.6	69.1	69.5	78.9	69.1	887.6
1990[2]	72.3	58.6	81.9	63.1	89.5	77.7	60.4	61.0	83.0				

[1] Includes latex and guayule. [2] Preliminary. [3] Data prior to 1985 are in thousands of long tons. *Source: Department of Commerce* T.560

World Rubber Production[1] In Thousands of Metric Tons

	Natural										Synthetic						
Year	Sri Lanka	India	Indonesia	Malaysia	Philippines	Thailand	Liberia	Brazil	China	World Total	Canada	West Germany	Japan	United States	United Kingdom	USSR	World Total
1981	123.9	150.7	867.5	1,510	75.3	504.0	77.5	30.3	127.7	3,705	263.3	396.8	1,010	2,225	226.2	2,000	8,545
1982	126.2	165.9	880.0	1,494	74.2	552.2	68.0	32.8	152.6	3,750	181.7	383.8	930.7	1,817	207.6	1,950	7,825
1983	140.0	168.0	997.2	1,564	71.8	587.2	76.5	35.2	172.4	4,030	182.0	418.0	1,003	1,987	219.5	1,970	8,275
1984	141.9	183.9	1,116	1,531	80.8	628.6	86.4	36.0	188.8	4,255	217.8	437.6	1,161	2,219	237.2	2,085	9,040
1985	137.5	198.3	1,130	1,470	90.1	725.7	84.4	40.4	187.9	4,340	209.2	447.6	1,158	2,026	232.6	2,125	8,940
1986	137.8	219.0	1,049	1,539	87.2	782.1	88.7	32.6	209.7	4,450	187.1	452.5	1,150	2,119	249.2	2,320	9,230
1987	121.8	227.4	1,203	1,579	83.0	921.6	93.0	26.6	237.6	4,780	179.8	468.4	1,192	2,182	257.0	2,366	9,430
1988	122.4	254.8	1,235	1,662	85.0	974.9	108.4	32.9	240.0	5,040	197.0	492.8	1,299	2,335	312.8	2,435	10,145
1989[2]	110.7	288.6	1,256	1,419	86.0	1,178	118.0	33.0	240.0	5,110	188.0	505.2	1,352	2,302	311.4	2,525	10,280
1990[3]										4,995							10,225

[1] Including rubber in the form of latex. [2] Preliminary. [3] Estimate. *Source: Rubber Study Group* T.556

World Consumption of Natural and Synthetic Rubber In Thousands of Metric Tons

	Natural									Synthetic						
Year	Australia	Brazil	Canada	France	West Germany	Japan	United Kingdom	United States	World Total	Canada	France	West Germany	Japan	United Kingdom	United States	World Total
1982	36.4	67.8	76.0	158.0	171.2	439.0	118.0	585.0	3,655	182.0	265.2	386.9	797.0	232.0	1,765	8,035
1983	30.9	70.2	87.0	163.0	179.5	504.0	120.0	665.0	3,990	195.0	276.6	395.8	851.0	185.0	1,883	8,300
1984	35.9	88.7	102.0	162.0	190.0	525.0	118.0	750.7	4,230	208.0	287.0	403.0	915.0	195.0	2,062	8,955
1985	35.8	97.6	95.0	156.0	202.2	539.5	126.0	764.0	4,350	173.0	311.8	411.3	947.5	201.0	1,962	8,950
1986	30.6	105.6	86.0	158.7	198.7	535.0	130.0	743.0	4,425	190.2	315.0	426.0	910.0	195.0	2,020	9,335
1987	35.5	115.4	98.0	170.0	198.5	568.0	134.0	789.0	4,810	210.0	316.4	453.4	946.0	216.0	2,017	9,600
1988	40.5	125.3	82.5	181.0	203.6	623.0	140.0	858.3	5,115	202.0	315.0	471.0	1,042	226.5	2,017	10,020
1989[1]	43.5	124.2	84.9	184.0	221.1	657.0	132.5	866.9	5,225	191.1	358.0	476.0	1,103	240.0	2,093	10,270
1990[2]									5,140							10,165

[1] Preliminary. [2] Estimate. *Source: Rubber Study Group* T.557

World Stocks[1] of Natural Rubber (by Countries) & Synthetic on Jan. 1 In Ths. Tonnes

		In Producing Countries							In Consuming Countries (Commercial Stocks)									
Year	Total Synthetic	Brazil	Sri Lanka	Indonesia	Malaysia (Peninsular)	Malaysia Singapore	Thailand	Total	Australia	Canada	China	France	West Germany	India	Japan	United Kingdom	United States	Total
1982	1,890	19.6	33.7	75.0	286.3	43.8	60.0	535	2.7	9.9	140.0	16.8	14.5	45.9	116.9	20.0	131.9	835
1983	1,730	18.5	11.3	75.0	266.0	26.9	36.6	570	4.2	6.9	137.5	9.5	14.5	60.6	90.8	17.8	95.4	860
1984	1,705	15.3	9.6	75.0	254.9	32.2	39.6	545	1.8	7.4	185.0	9.0	14.5	47.4	81.0	16.8	80.8	875
1985	1,790	15.9	10.2	95.0	228.8	36.8	41.3	545	2.8	8.5	187.5	4.0	15.0	58.0	70.7	15.8	96.4	925
1986	1,780	13.5	12.2	90.0	191.8	22.0	47.1	515	2.6	9.0	122.5	4.0	15.0	58.2	70.7	10.0	95.2	900
1987	1,805	13.3	23.6	87.5	207.3	21.6	32.5	530	2.6	12.0	105.0	6.0	15.0	85.5	61.9	10.5	73.0	875
1988	1,775	10.5	20.0	100.0	208.5	21.6	37.8	490	2.5	12.5	147.5	11.0	15.0	77.6	63.6	10.5	72.5	830
1989	1,700	13.8	23.2	105.0	286.5	32.2	53.0	545	2.4	13.0	150.0	9.5	14.5	80.9	97.2	12.0	61.7	730
1990[2]	1,585	5.4	26.9	105.0	248.3	24.0	53.7	500	2.3	13.0	150.0	8.0	14.5	78.4	105.6	12.0	92.0	695
1991[3]	1,295							430										590

[1] Exclusive of "Stock Afloat" and unreported gov't. stockpiles. [2] Preliminary. [3] Estimate. *Source: Rubber Study Group* (London) T.558

Net Exports of Natural Rubber from Producing Areas In Thousands of Metric Tons

Year	Burma	Kampuchea	Sri Lanka (Ceylon)	Indonesia	Malaysia (Peninsular)	Sabah	Sarawak	Thailand	Vietnam	Other Asia	Liberia	Nigeria	Other Africa	Papua New Guinea	World Total
1981		4.0	132.5	808.7	1,402	25.5	28.2	476.0	33.7	30.8	76.9	23.6	57.5	4.5	3,110
1982		7.5	131.3	801.4	1,317	21.7	15.9	546.7	32.3	24.2	60.1	26.8	57.8	2.3	3,065
1983		10.0	125.2	938.0	1,498	21.5	18.9	552.5	35.8	19.0	73.6	28.8	62.0	2.7	3,370
1984		12.0	126.2	1,010	1,486	25.2	18.0	595.2	35.0	19.0	87.9	28.8	65.5	3.0	3,520
1985		14.0	120.4	1,001	1,426	22.0	17.4	685.3	35.5	24.7	87.2	29.1	69.0	5.1	3,610
1986		20.0	110.0	958.7	1,444	24.6	16.3	755.2	35.0	30.3	90.4	34.4	78.0	4.9	3,615
1987		20.0	106.0	1,093	1,529	29.5	19.9	873.2	40.0	24.3	91.1	36.5	94.0	3.8	3,935
1988[1]		21.0	99.3	1,132	1,500	35.8	28.3	906.4	43.0	32.5	105.6	47.4	110.0	4.5	4,015
1989[2]		54.5	86.0	1,152	1,305	36.0	23.6	1,101	54.5	31.5	118.0	73.0	115.0	4.1	4,105

[1] Preliminary. [2] Estimate. *Source: Rubber Study Group* (London) T.559

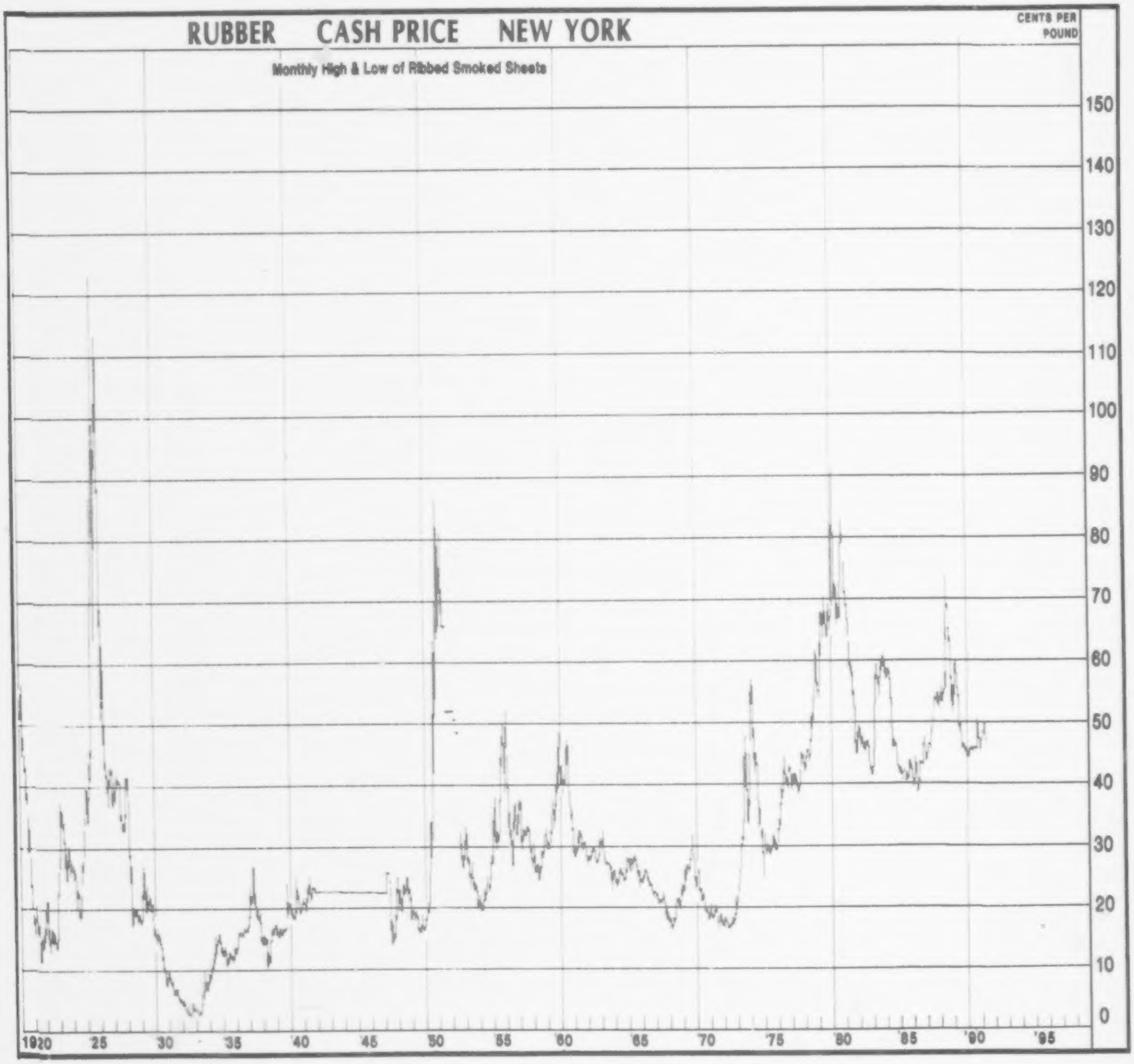
RUBBER

Average Spot Crude Rubber Prices (Smoked Sheets[1]) in New York In Cents Per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1981	71.3	69.0	65.0	59.0	58.0	57.0	56.0	54.0	50.4	—	45.6	48.3	57.6
1982	48.8	46.5	47.0	45.3	45.3	46.1	46.5	46.8	44.5	42.6	42.1	41.8	45.3
1983	44.0	48.5	57.8	57.8	56.8	54.5	58.3	59.3	60.5	60.5	58.3	—	56.0
1984	57.3	58.3	58.0	56.8	51.8	47.0	46.0	46.0	46.0	43.0	42.8	42.0	49.6
1985	42.3	42.3	41.8	42.3	40.8	42.0	40.3	41.8	41.8	43.8	42.5	39.8	41.8
1986	40.7	42.8	42.0	39.2	40.1	41.0	43.5	43.5	45.3	46.9	44.7	44.7	42.9
1987	45.9	46.5	43.8	47.4	49.1	50.6	53.5	53.7	54.2	53.8	53.1	54.0	50.5
1988	54.6	53.8	54.9	55.7	58.6	67.6	66.1	63.8	60.1	55.2	53.0	54.1	58.1
1989	56.0	59.3	54.1	55.2	52.1	49.5	49.2	47.2	46.1	46.1	45.6	44.8	50.4
1990	44.7	45.8	45.9	45.6	45.8	46.0	45.8	47.5	48.4	46.5	46.3	47.1	46.3
1991	47.5	48.9											

[1] No. 1, ribbed, plantation rubber. *Source: Wall St. Journal; CRB.*

T.561



Consumption of Natural Rubber in the United States In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	63.0	57.3	55.7	46.9	42.3	41.3	38.8	43.2	49.4	49.5	50.3	48.7	586.15
1981	49.0	52.6	55.4	55.1	53.9	59.5	56.4	51.1	52.1	57.3	49.7	42.6	634.67
1982	55.3	59.9	50.2	57.8	63.3	68.9	32.7	65.6	48.8	53.3	48.9	56.0	660.61
1983	64.5	44.5	55.3	55.3	56.9	67.0	48.8	39.2	50.2	75.3	69.7	49.6	676.27
1984	73.8	56.8	83.1	68.2	65.1	42.4	73.9	56.1	63.7	58.3	55.4	54.1	750.74
1985	71.8	65.7	91.5	51.7	89.0	45.2	55.4	47.3	68.1	47.2	65.7	52.4	774.68
1986	59.4	71.8	71.3	81.9	45.5	54.6	69.9	49.9	57.0	80.3	50.8	51.2	743.56
1987	49.9	85.4	81.3	62.3	62.6	56.3	67.4	61.4	61.9	57.4	60.6	69.4	775.82
1988	80.9	66.3	91.6	60.8	68.7	66.2	53.5	80.6	64.6	74.5	75.4	75.2	858.28
1989[1]	89.9	51.1	96.6	68.4	87.9	65.1	82.7	70.8	72.0	62.1	84.6	50.9	866.87
1990[1]	62.6	57.3	79.0	65.2	87.4	73.9	57.4	74.1	78.8				

[1] Preliminary. *Source: Rubber Manufacturers' Association*

T.562

Stocks of Natural Rubber in the United States, Beginning of Month In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1980	132.1	131.4	135.3	141.4	152.4	145.7	147.4	149.9	138.5	132.9	129.5	123.1
1981	126.7	128.0	125.4	122.8	127.6	124.1	119.5	113.5	111.2	114.4	123.0	130.5
1982	142.4	127.1	126.5	121.3	116.6	110.8	105.4	110.2	97.7	89.0	90.2	95.4
1983	95.4	91.8	95.0	87.4	93.8	100.0	97.9	99.2	90.7	83.3	74.8	75.9
1984	80.8	95.2	95.7	87.7	87.8	91.4	88.5	87.0	84.8	86.2	87.3	91.3
1985	96.4	94.3	97.3	91.4	101.9	95.9	95.6	97.9	93.9	84.9	81.1	85.1
1986	95.2	97.0	96.9	100.4	98.6	98.6	96.7	93.8	86.4	91.6	75.3	78.2
1987	38.5	76.7	78.8	70.2	80.2	79.5	79.0	82.5	77.0	70.6	65.9	65.5
1988	72.5	74.9	75.3	70.7	74.6	72.9	71.6	68.7	71.2	63.9	57.9	58.4
1989[1]	61.7	71.1	67.5	77.4	82.2	86.7	86.2	86.2	88.1	83.3	87.7	83.9
1990[1]	92.0	100.2	100.2	101.6	97.2	97.3	99.8	101.6	87.2	90.4		

[1] Preliminary. *Source: Rubber Manufacturers' Association*

T.563

Stocks of Synthetic Rubber in the United States, Beginning of Month In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1980	402.9	439.9	436.2	427.6	452.2	445.1	429.2	391.2	372.3	339.7	325.4	328.9
1981	341.8	364.5	354.6	347.0	365.9	368.3	359.8	369.4	353.4	351.9	352.6	364.4
1982	349.0	333.3	336.8	349.2	358.3	364.4	352.9	342.8	326.6	304.3	318.8	294.6
1983	269.7	281.0	284.8	283.5	283.8	294.3	290.8	304.8	269.8	256.2	250.7	276.9
1984	277.9	284.1	277.2	277.0	294.6	305.0	302.3	309.3	300.6	312.0	301.4	285.9
1985	272.1	281.2	271.8	288.6	294.0	398.0	247.8	295.8	413.5	397.3	374.9	367.0
1986	213.9	352.8	217.5	397.7	403.0	238.6	247.5	239.9	233.4	236.5	231.1	224.6
1987	235.6	247.0	249.5	242.6	239.9	242.2	241.8	251.9	240.6	222.8	213.6	213.8
1988	229.7	237.8	235.1	229.6	237.5	246.2	249.6	261.0	259.9	258.6	259.0	258.2
1989[1]	276.6	288.9	287.7	294.4	289.6	300.4	303.7	308.7	314.1	323.4	329.6	414.8
1990[1]	404.0	393.5	392.5	385.8	406.8	397.5	395.0	414.9	420.8	419.6		

[1] Preliminary. *Source: Department of Commerce*

T.564

Production of Synthetic Rubber in the United States In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	195.6	194.7	206.8	192.4	159.6	129.6	110.3	123.7	149.8	174.6	178.5	193.7	2,015
1981	193.5	169.7	200.4	180.9	175.9	158.2	161.5	159.7	168.4	170.0	157.7	125.5	2,021
1982	155.6	162.3	187.9	171.7	171.1	156.8	139.7	145.5	147.9	154.4	122.4	116.5	1,829
1983	155.2	153.9	170.1	160.5	171.1	164.6	154.4	146.7	159.6	174.5	189.4	160.2	1,936
1984	183.3	173.0	190.3	193.2	191.4	183.7	166.7	178.4	173.0	179.7	158.3	147.5	2,156
1985	169.9	161.6	182.1	166.0	154.2	139.5	150.4	154.2	160.3	153.6	149.2	131.8	1,838
1986	166.5	156.7	189.1	178.6	167.8	164.9	155.3	170.5	178.6	186.7	145.6	174.7	2,013
1987	187.1	177.5	193.6	174.1	179.7	175.0	186.2	164.2	176.0	191.0	182.9	194.8	2,184
1988	187.0	179.1	201.2	193.7	205.4	197.4	187.4	200.4	189.6	193.2	201.9	188.8	2,335
1989[1]	206.3	181.8	206.2	207.2	189.1	179.6	178.7	186.2	201.7	204.7	189.9	162.8	2,261
1990[1]	173.5	180.1	182.5	187.8	174.6	172.0	171.9	180.9	180.4				

[1] Preliminary. *Source: Department of Commerce*

T.565

Consumption of Synthetic Rubber in the United States In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	170.8	176.1	191.1	148.9	135.7	120.1	131.0	133.7	166.0	167.9	157.7	155.1	1,854
1981	153.0	166.7	194.0	144.9	167.1	154.1	144.7	165.0	163.5	163.8	141.1	131.9	1,890
1982	153.3	140.7	154.3	145.3	148.5	154.5	135.8	150.5	158.1	131.0	136.8	136.1	1,757
1983	131.7	140.2	158.2	146.3	146.2	156.7	135.6	170.3	170.5	180.4	158.2	147.2	1,828
1984	177.5	175.4	180.5	166.7	167.1	171.0	147.1	173.9	151.5	184.1	166.3	147.2	2,062
1985	155.8	169.5	159.6	154.8	163.6	137.9	139.8	150.6	171.6	174.3	154.0	140.3	1,802
1986	160.7	145.0	175.7	157.6	163.9	148.0	151.5	168.5	160.6	177.5	145.8	155.7	1,895
1987	162.8	166.1	182.8	160.6	163.1	157.8	161.9	163.6	172.2	185.1	167.6	174.1	2,017
1988	158.5	166.8	186.8	163.1	172.1	166.3	160.9	171.1	162.5	170.6	180.5	150.5	2,017
1989[1]	191.7	173.0	189.4	194.7	170.7	165.4	167.9	170.5	169.0	179.0	182.2	151.1	2,051
1990[1]	159.6	158.3	160.0	140.6	160.9	149.4	136.7	148.1	155.3				

[1] Preliminary. *Source: Department of Commerce*

T.566

Exports of Synthetic Rubber from the United States In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	31.46	34.48	41.98	41.68	46.88	37.33	36.54	30.46	25.51	33.45	30.72	32.31	422.80
1981	31.21	31.65	38.73	31.77	32.00	28.55	26.27	21.97	24.40	23.94	22.49	21.65	334.63
1982	27.76	23.46	31.18	26.53	24.73	25.23	20.40	22.04	22.83	21.13	20.47	18.86	284.62
1983	20.24	18.61	24.44	24.91	31.66	24.37	20.15	21.08	22.01	20.14	23.75	23.67	275.03
1984	24.12	22.22	28.09	29.13	29.42	28.02	29.58	30.24	29.95	25.54	25.92	25.68	327.91
1985	24.24	23.04	29.34	26.65	30.87	27.69	22.57	25.35	28.04	25.74	22.48	25.85	311.85
1986	23.87	28.10	24.38	35.96	26.12	25.44	26.76	32.28	34.79	30.88	28.22	27.47	344.27
1987	32.42	33.21	36.06	37.06	39.41	36.92	34.10	33.27	38.84	33.46	37.53	37.11	429.40
1988	39.70	37.35	41.77	41.68	40.43	41.12	29.76	44.03	38.62	37.18	36.25	32.12	460.01
1989[1]	42.40	45.66	54.98	41.27	54.39	51.30	43.71	48.21	54.54	54.64	43.59	44.39	579.08

[1] Preliminary. *Source: Department of Commerce*

T.567

Production of Auto. Pneumatic Casings[2] & Truck & Bus Retail Sales[1] in the U.S. In Ths. of Casings

Year	Total Production of Tires													Retail Sales[1]
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
1980	15,188	15,059	15,082	13,678	11,370	10,716	10,206	12,057	13,911	15,790	12,861	13,346	159,263	2,003
1981	15,434	15,614	16,805	15,438	15,157	15,447	14,321	15,443	15,894	16,604	13,750	11,855	181,762	1,808
1982	14,866	15,387	17,051	15,077	14,856	15,669	12,293	14,835	15,528	15,381	13,585	13,972	178,500	2,152
1983	15,497	14,992	15,370	16,325	15,653	15,473	12,570	16,440	16,360	16,734	15,136	15,483	186,923	2,654
1984	16,749	17,498	19,122	16,988	18,043	18,557	15,546	18,078	17,333	19,136	16,645	15,682	209,375	3,485
1985	18,381	17,375	18,704	17,388	16,781	15,216	12,989	16,635	16,844	17,626	15,198	13,786	196,923	3,913
1986	16,306	15,966	16,968	16,037	15,003	14,647	14,203	16,112	16,540	18,180	15,144	15,183	190,289	3,947
1987	16,879	16,593	17,733	16,680	16,982	16,548	15,796	16,723	17,204	18,956	16,455	16,428	202,978	4,088
1988	17,345	18,027	19,305	17,642	17,403	17,941	15,022	18,058	18,115	19,138	17,253	16,102	211,351	4,121
1989[3]	18,944	18,102	19,670	19,224	19,090	18,312	14,835	18,288	16,963	18,400	16,323	14,721	212,870	4,000
1990[3]	19,017	17,376	19,522	17,680	17,990	18,186	14,996	18,555	17,612	19,965				

[1] Domestic & imports, in thousands. [2] Passenger cars, buses, trucks & motorcycle tires. [3] Preliminary.
Sources: Rubber Manufacturers' Association; Motor Vehicle Manufacturing Association

T.568

Stocks of Auto. Pneumatic Casings & Passenger[1] Car Retail Sales in the U.S. In Ths. of Casings

Year	Total Stocks of Tires												Retail Sales[1]
	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1	
1980	44,873	46,760	49,993	50,471	49,220	46,972	42,817	40,079	37,057	33,730	32,112	32,363	8,979
1981	33,298	41,226	44,402	45,217	44,713	43,480	41,445	39,998	39,601	38,986	39,487	41,112	8,535
1982	40,863	42,904	46,254	47,817	46,583	45,337	43,475	40,763	40,192	38,685	38,116	38,436	7,980
1983	39,955	43,839	45,483	50,287	51,921	42,395	39,622	36,989	35,541	32,854	31,530	31,676	9,179
1984	33,340	35,450	37,615	38,529	38,026	37,693	37,678	36,365	37,199	37,685	37,277	37,995	10,394
1985	39,623	41,948	45,905	48,875	49,168	49,063	46,909	44,349	43,553	41,514	40,425	40,023	11,039
1986	39,823	40,717	43,499	45,359	44,519	44,741	40,009	38,036	36,836	34,890	34,130	33,681	11,450
1987	34,286	36,323	38,665	40,673	39,962	40,312	37,872	37,344	37,501	36,234	34,539	33,702	10,278
1988	34,338	37,047	39,904	40,737	41,149	40,159	37,976	37,355	36,064	34,771	34,074	33,434	10,639
1989[2]	33,191	35,186	37,884	40,552	42,791	43,530	42,695	42,596	41,902	39,852	39,156	38,378	9,903
1990[2]	39,308	43,888	46,561	48,446	49,601	48,728	47,893	45,351	43,492	42,047	41,553		9,500

[1] Domestic & imports, in thousands. [2] Preliminary. *Sources: Rubber Manufacturers' Association; Motor Vehicle Mfg. Association*

T.569

Rye

Rye production in the U.S. continued to retreat in 1990/91 and was estimated at 13 million bushels, down from 13.5 million the previous season and 14.7 million in 1988/89. Both planted and harvested area declined in 1990/91.

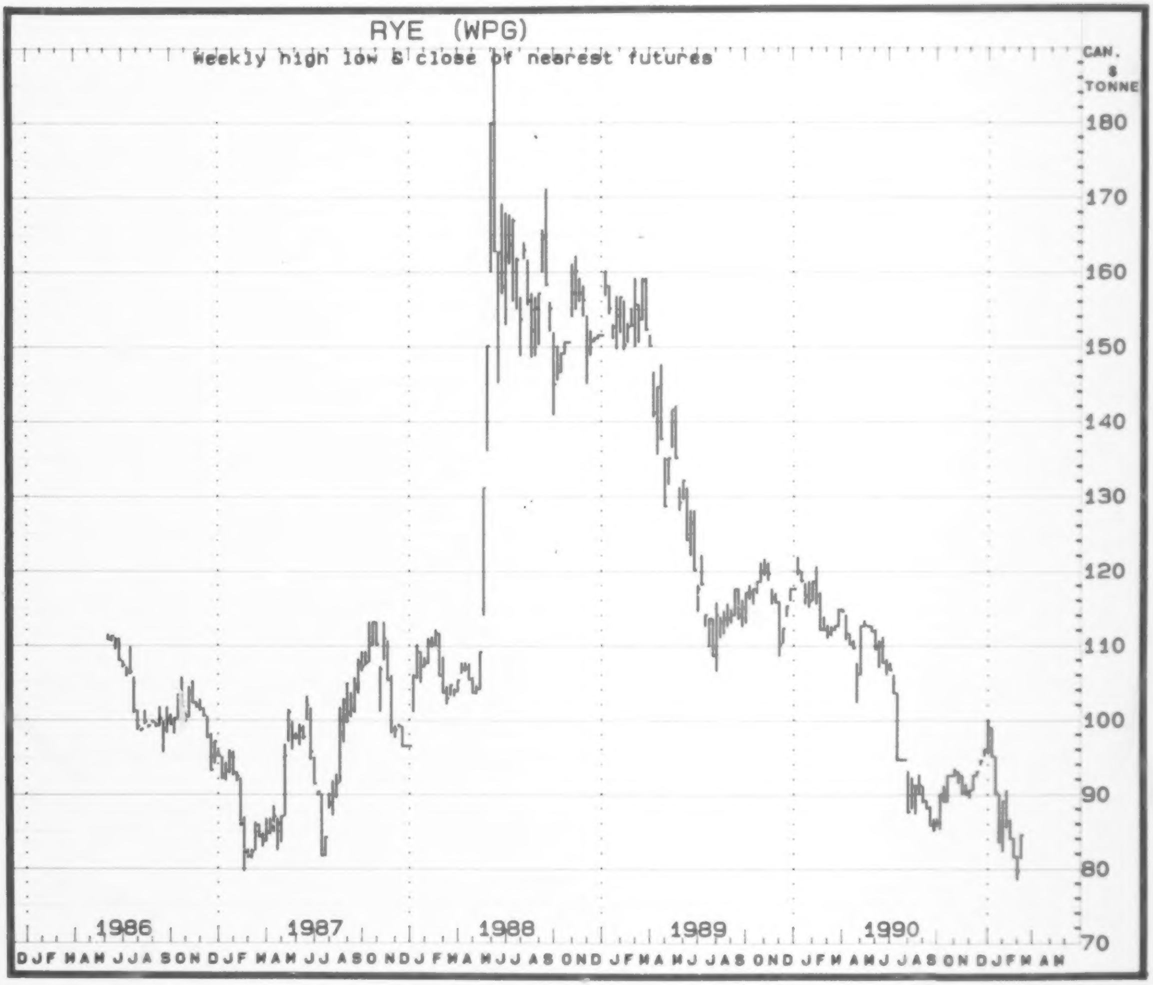
The season's carryin stocks dropped sharply to 5.6 million bushels in 1990/91 from 10.3 million a year earlier. Total available supply in the U.S. was placed at 18.7 million bushels, the lowest in many years.

Rye is used in bread, as an ingredient in whiskey and gin, and as an animal feed. Total domestic disappearance was pegged at 13.7 million bushels in 1990/91, down from 17.4 million the year before. Food usage was unchanged at 3.5 million bushels. Feed and residual use were expected to decline to 5.2 million bushels from 8.9 million because of the smaller supplies, while seed and industry usage were likely to be unchanged at 3 million and 2 million bushels, respectively. Rye exports were estimated at one million bushels, up slightly from 800,000 the previous year.

Carryout stocks at the end of the 1990/91 season were projected at 4 million bushels, down from 5.6 million the year before. The government's support loan rate was lowered from $1.40/bu. to $1.33. The season average price was expected to be $2.10, the same as a year earlier.

Futures Market

Rye futures are traded on the Winnipeg Commodity Exchange (WCE).



RYE

World Production of Rye In Thousands of Metric Tons

Crop Year	Argentina	Austria	Canada	Czechoslovakia	Denmark	France	Germany West	Germany East	Hungary	Netherlands	Poland	Spain	Turkey	USSR	United States	World Total
1981–2	149	320	927	544	208	342	1,793	1,797	116	29	6,731	212	520	9,500	478	24,373
1982–3	148	348	933	583	235	327	1,703	2,119	120	26	7,792	169	430	14,000	496	30,108
1983–4	130	348	827	751	315	278	1,646	2,092	138	26	8,781	253	380	14,000	689	31,407
1984–5	140	380	664	710	608	321	1,983	2,510	192	25	9,540	325	360	13,400	827	33,398
1985–6	100	339	569	620	565	283	1,877	2,505	163	19	7,600	295	360	15,700	524	32,217
1986–7	60	284	609	547	546	200	1,818	2,406	172	19	7,074	220	350	15,248	496	30,782
1987–8	88	309	493	496	513	275	1,645	2,283	186	25	6,816	320	350	18,055	503	33,041
1988–9[1]	41	356	257	530	366	262	1,634	1,780	245	27	7,200	357	360	18,517	373	32,950
1989–90[2]				500	500		1,800	2,100			8,600			20,100	347	37,400
1990–1[2]				500	600		2,000	2,100			8,700			21,000	257	38,700

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.570

Salient Statistics of Rye in the United States

Year Begin. June 1	Supply: Stocks, June 1: Privately Owned[2]	Supply: Stocks, June 1: Gov't.[3]	Supply: Total Stocks	Supply: Production	Supply: Imports	Supply: Total Supply	Disappearance: Domestic Use: Food	Disappearance: Domestic Use: Industry	Disappearance: Domestic Use: Seed	Disappearance: Domestic Use: Feed[5]	Disappearance: Domestic Use: Total	Disappearance: Exports	Disappearance: Total Disappearance	Acreage: Planted	Acreage: Harvested for Grain	Yield Per Harvested Acre
	Thousands of Bushels													Mil.		Bushels
1981–2	4,000	145	4,030	18,187	432	22,600	3,458	2,242	4,160	8,200	18,100	1,529	19,600	2,566	685	26.6
1982–3			3,012	19,533	3,043	25,500	3,315	2,256	4,300	9,600	19,500	194	19,700	2,533	677	28.8
1983–4			5,822	27,008	1,600	34,400	3,500	2,100	4,700	11,900	22,200	1,000	23,200	2,707	892	30.3
1984–5			11,300	32,407	600	44,200	3,500	2,000	4,100	14,400	24,000	400	24,400	2,971	979	33.1
1985–6			19,800	20,373	2,200	42,400	3,500	2,100	3,800	10,900	20,300	200	20,500	2,543	708	28.8
1986–7			21,900	19,067	1,000	41,900	3,500	2,000	3,700	13,700	22,900	500	23,400	2,334	661	28.8
1987–8			18,600	19,526	1,200	39,300	3,500	2,000	3,800	10,600	19,900	500	20,400	2,428	671	29.1
1988–9			18,900	14,689	200	33,800	3,500	2,000	3,200	11,400	20,100	3,400	23,500	2,374	595	24.7
1989–90[1]			10,300	13,647	0	24,000	3,500	2,000	3,000	9,000	17,500	800	18,300	2,014	484	28.2
1990–1[4]			5,600	10,098	500	16,200	3,500	2,000	3,000	4,200	12,700	500	13,200	1,625	484	27.1

[1] Preliminary. [2] Includes total loans. [3] Uncommitted, gov't only. [4] Forecast. [5] Includes residual; approximates total feed use.
Source: Economics Research Service, U.S.D.A. T.571

Production of Rye in the United States In Thousands of Bushels

Year	Illinois	Indiana	Kansas	Michigan	Minnesota	Georgia	Nebraska	No. Dakota	Ohio	Oklahoma	Pennsylvania	So. Dakota	Virginia	Texas	Wisconsin	So. Carolina
1982	299	260	240	522	3,300	1,470	1,269	2,400	155	736	408	4,680	364	504	300	621
1983	336	270	220	600	4,960	1,470	1,265	4,320	210	780	578	8,740	312	450	300	320
1984	308	336	312	588	6,650	1,760	1,392	5,400	175	704	578	10,800	378	240	216	546
1985	256	308	300	651	3,300	2,070	1,242	2,640	172	828	532	4,440	312	400	234	532
1986	210	280	210	713	1,600	1,785	1,035	4,250	175	840	391	4,440	364	190	168	391
1987	144	297	270	640	1,200	1,540	1,150	5,115	180	360	525	5,040	435	150	100	528
1988	140	210	130	650	920	1,890	1,375	1,350	185	720	684	2,250	560	150	120	720
1989	312	204	80	825	1,088	1,610	600	1,064	155	532	576	3,240	264	126	360	644
1990[1]	165	124	130	580	868	1,320	750	780	175	342	496	1,870	256	140	465	594

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.572

Average[1] Open Interest of Rye Futures in Winnipeg In 20 Tonne Units

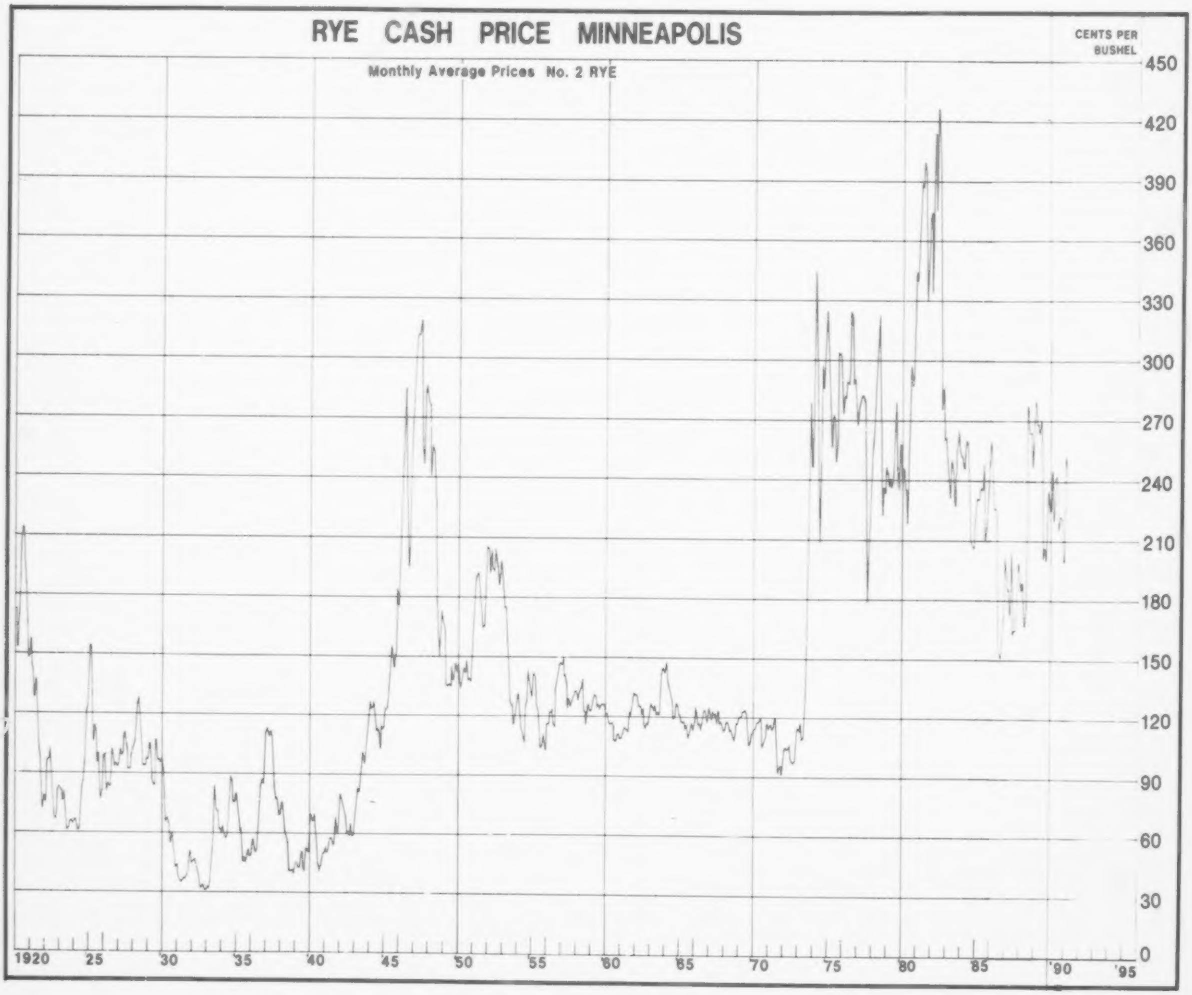
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1982	3,739	3,622	3,219	3,583	4,426	3,008	2,268	4,286	5,250	4,052	3,773	3,244
1983	3,227	3,628	3,097	4,625	4,834	4,935	7,883	7,915	3,665	4,494	3,110	3,054
1984	2,224	4,566	3,980	3,883	3,731	3,023	2,888	5,430	7,098	6,320	5,894	4,158
1985	4,267	4,826	4,175	4,227	3,893	3,919	4,031	5,022	4,872	5,478	4,289	3,786
1986[1]	4,287	4,335	3,302	4,211	3,039	2,553	2,900	3,317	3,479	2,767	2,827	2,031
1987	2,128	2,406	1,892	2,813	3,778	4,427	2,866	3,167	4,209	3,228	3,211	2,494
1988	2,690	2,645	2,760	2,809	2,176	3,635	3,562	3,628	3,537	3,139	2,827	2,160
1989	2,382	2,556	1,768	1,586	1,666	1,963	1,990	3,027	3,004	2,954	3,484	2,537
1990	2,828	2,840	1,943	2,335	2,500	2,408	2,673	3,062	2,669	2,379	2,116	1,625
1991	1,715											

[1] Data Prior to Avg. 1986 are for the end of Month. *Source: Winnipeg Commodity Exchange* T.577

U.S. Rye Crop Production Reports and CCC Operations In Thousands of Bushels

Year Begin. June 1	Official Crop Reports				National Average Support Rate		Placed Under Loan Total	% of Production	Acquired by CCC	Total Stocks Ending June 30	
	July 1	Aug. 1	Dec. 1	Final	$ Per Bushel	% of Parity				Ending Carry-over[1]	CCC Owned
1979–0	23,638	23,736	24,549	21,887	1.79	49	1,900	8.5	—	8,973	—
1980–1	15,784	16,189	16,265	15,958	1.91	51	450	2.4	—	11,970	—
1981–2	16,743	17,083	18,621	18,187	2.04	48	500	2.6	—	4,030	—
1982–3	20,119	19,924	20,817	19,533	2.17	48	1,700	8.1	1,400	3,012	—
1983–4	26,058	25,698	28,152	27,116	2.25	47	5,300	19.6	1,400	5,822	1,400
1984–5	29,903	30,184	32,392	32,463	2.17	45	10,100	30.9	4,900	11,300	6,500
1985–6	19,255	19,298	20,637	20,637	2.17	47	4,100	19.9	9,900	19,800	16,000
1986–7	—	17,892	19,498	19,522	1.63	38	5,900	30.3	2,600	21,900	15,400
1987–8	—	19,098	19,718	19,818	1.55	38	8,600	43.4	1,600	18,600	14,900
1988–9[2]	—	15,062	—	14,689	1.50	37	300	2.0	800	18,900	7,400
1989–90[2]	—	13,610	—	13,647	1.40	32				10,300	
1990–1[2]		10,098			1.33					5,600	

[1] Old-crop rye under loan at end of crop year. [2] Preliminary. [3] Derived by subtracting CCC stocks & loans outstanding from ending carryover. [4] Includes previous crops under reseal. *Source: Economic Research Service, U.S.D.A.* T.573



RYE

Average Price of Cash Rye No. 2 at Minneapolis In Cents per Bushel

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
1981–2	352	330	356	371	374	334	394	414	375	426	410	397	378
1982–3	342	276	286	260	261	256	251	246	231	250	244	232	261
1983–4	227	256	265	256	254	252	251	245	250	260	258	244	252
1984–5	227	209	207	206	221	227	231	230	235	236	235	248	226
1985–6	210	215	223	233	248	259	246	228	226	226	219	178	226
1986–7	156	151	160	168	173	202	195	185	185	173	196	163	176
1987–8	165	165	175	198	199	189	185	189	175	167	181	278	189
1988–9	266	264	264	247	269	280	268	268	264	270	257	201	260
1989–90	206	203	214	235	229	225	245	220	222	241	242	232	226
1990–1	215	222	220	220	190	245							

Source: Economic Research Service, U.S.D.A.

T.575

High, Low & Closing Prices of May Rye Futures in Winnipeg In Canadian Dollars per Tonne

Year of Delivery	Year Prior to Delivery							Delivery Year					Life of Delivery Range
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1983 High	162.00	162.00	152.50	150.50	139.50	140.20	133.00	126.30	123.20	123.00	130.00	126.00	162.00
Low	162.00	152.00	138.00	133.80	128.00	129.00	121.00	119.80	116.40	115.30	118.10	116.50	115.30
Close	162.00	152.50	145.00	133.80	128.20	130.20	121.00	123.10	120.50	122.70	118.70	122.50	—
1984 High	—	—	174.00	176.00	173.30	165.30	158.30	150.00	141.00	140.00	139.30	157.00	176.00
Low	—	—	154.40	169.50	154.40	156.60	146.00	140.70	125.10	129.20	134.00	131.50	125.10
Close	—	—	170.10	170.50	162.50	157.70	148.90	141.00	129.30	138.20	135.50	151.50	—
1985 High	—	—	156.00	158.70	156.90	157.20	154.80	145.40	142.30	134.60	133.80	128.80	158.70
Low	—	—	152.20	152.90	152.20	153.00	145.20	143.00	132.00	132.30	128.30	122.80	122.80
Close	—	—	153.00	157.70	152.70	154.10	145.20	143.00	132.60	133.70	128.30	122.80	—
1986 High	—	—	131.70	130.80	128.00	132.50	134.00	126.90	118.40	107.00	102.20	116.00	131.70
Low	—	—	121.50	124.50	121.40	125.00	126.30	119.50	106.60	100.70	91.70	96.30	91.70
Close	—	—	128.30	124.50	125.00	132.10	126.30	119.70	107.50	102.50	100.50	107.20	—
1987 High	—	—	101.00	102.50	105.00	104.50	103.00	98.70	96.00	89.50	88.20	101.20	105.00
Low	—	—	100.50	97.40	99.50	100.80	96.00	94.20	82.70	83.00	82.30	85.50	82.30
Close	—	—	101.00	100.40	101.00	103.10	98.20	95.70	84.70	84.50	85.40	97.50	—
1988 High	—	—	106.50	107.00	107.50	104.70	104.70	108.40	110.30	111.00	107.50	160.00	160.00
Low	—	—	98.00	104.00	100.00	99.40	102.00	103.00	104.20	104.50	103.50	103.40	98.00
Close	—	—	106.50	104.80	101.20	103.80	103.00	104.20	110.10	106.50	103.50	160.00	—
1989 High	—	—	168.50	171.00	162.80	165.00	160.50	161.00	158.10	159.00	147.50	142.00	171.00
Low	—	—	156.00	157.00	157.00	156.00	157.50	151.30	150.50	150.00	128.50	128.00	128.00
Close	—	—	157.50	159.90	161.50	158.80	158.80	153.50	156.30	150.50	128.50	132.00	—
1990 High	—	—	—	—	132.00	130.00	127.00	125.30	124.00	118.00	114.00	113.20	132.00
Low	—	—	—	—	129.50	124.00	119.50	119.40	116.00	114.50	102.30	108.90	102.30
Close	—	—	—	—	130.30	124.00	125.50	122.00	117.60	114.50	106.20	111.80	—
1991 High	—	—	106.80	104.00	104.50	103.50	104.00						
Low	—	—	104.00	100.10	100.50	100.50	101.50						
Close	—	—	104.00	101.10	103.00	101.50	104.00						

Source: Winnipeg Commodity Exchange

T.576

Rye Under Price Support Through the End of the Month (Cumulative Total from Current Season's Crop) In Thousands of Bushels

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1982–3	7	344	771	1,008	1,096	1,193	1,324	1,369	1,588	1,709	1,711	1,712	
1983–4	83	1,819	2,228	3,533	3,885	4,199	4,577	4,862	5,141	5,228	5,254	5,256	
1984–5	68	3,581	6,661	8,224	8,653	8,911	9,655	9,830	9,996	10,078	10,066	10,070	
1985–6	567	1,769	2,836	3,516	3,728	3,816	3,955	3,996	4,012	4,060	4,074	4,078	
1986–7	147	1,337	3,249	4,627	5,022	5,140	5,383	5,594	5,722	5,879	5,878	5,888	5,892
1987–8	—	1,237	4,472	5,621	6,498	6,690	7,282	8,164	8,485	8,579	8,605	8,607	8,604
1988–9	—	158	225	239	246	279	301	306	323	325	325	325	325
1989–90	—	352	490	516	523	535	558	558	563	563	563	563	563
1990–1	—	73	157										

Source: U.S. Department of Agriculture

T.578

Salt

U.S. salt production increased for the third consecutive year in 1990 to an estimated 39.4 million short tons, valued at about $800 million. The Bureau of Mines estimated that producers either sold or used in their own chemical processes 39 million tons, up marginally from 38.9 million in 1989. However, apparent consumption fell to 43.1 million tons from 43.4 million. Net imports of 4.1 million tons and changes in inventories made up the difference between production and consumption.

The chemical industry consumed about 46 percent of the salt sold or used by consumers in 1990, with salt brine representing about 85 percent of the salt used for feedstock. Chlorine and caustic soda, which are coproducts, traditionally account for 95 percent of the salt used by the chemical industry. While environmental concerns have reduced demand for some chlorine-based products, caustic soda use was strong in 1990. Chlorine consumption in pulp and paper, plastic packaging, solvents, chlorofluorocarbons, and water treatment was expected to decline during the 1990s, requiring less salt for feedstock.

Salt for highway deicing accounted for 26 percent of U.S. demand in 1990. But that was expected to decline because of the damage salt does to roads. Salt at $30/ton is far cheaper than alternative deicers like calcium magnesium acetate at $650/ton. However, repairing the road damage caused by one ton of salt can cost from $600 to $1,000. Several state highway departments, airports, and the Williamsburg Bridge in New York have switched to other deicers.

World Production of All Salt In Thousands of Short Tons

Year	Brazil	Canada	China	France	West Germany	India	Italy	Japan	Mexico	Netherlands	Poland	Spain	United Kingdom	United States	USSR	World Total
1984	4,990	11,282	17,950	7,880	13,461	8,520	4,385	1,053	6,798	4,050	5,193	3,735	7,856	39,256	18,200	190,258
1985	2,964	11,117	15,924	7,841	14,419	10,889	4,129	1,300	7,129	4,579	5,363	3,571	7,877	40,102	17,747	190,629
1986	2,425	11,389	19,070	7,808	14,443	11,153	4,419	1,510	6,840	4,148	5,976	3,418	7,800	36,663	16,865	192,755
1987	5,015	11,165	19,800	8,642	14,844	10,915	4,702	1,540	7,047	4,386	6,799	3,[illegible]22	7,800	36,532	16,975	196,852
1988[1]	4,802	11,781	24,250	8,720	14,997	10,145	4,839	1,545	7,924	4,071	6,280	3,400	7,800	38,980	17,100	202,705
1989[2]	4,840	12,279	30,850	8,860	14,440	9,904	4,834		8,435		6,280	3,400	6,390	38,856	16,300	209,988
1990[2]		12,200	31,500	8,800	14,500	9,900	4,900		8,700		6,200		6,300	39,000	16,400	210,000

[1] Preliminary [2] Estimate. *Source: Bureau of Mines* T.581

Salient Statistics of the Salt Industry in the United States In Thousands of Short Tons

Year	Net Import Reliance as a % of Apparent Consumption	Avg. Value F.O.B. Mine Vacuum & Open Pan $ Ton	Sold or Used by Producers										Imports for Consumption	Exports		Apparent Consumption
			Evaporated (Mfg.)				Rock Salt									
			Bulk													
			Open & Vacuum Pans	Solar	Pressed Blocks	Total Evaporated	Bulk	Pressed Block	Total Salt Rock	Salt in Brine	Total Salt	Value[3] Million $		Total	To Canada	
1984	15	92.78	3,322	2,345	542	6,209	13,276	71	13,348	19,669	39,225	675.1	7,545	820	792	45,950
1985	14	92.66	3,604	2,666	455	6,725	14,000	70	14,690	19,107	40,067	739.6	6,207	904	883	45,370
1986	12	91.27	3,583	2,562	465	6,610	11,927	67	12,598	17,920	36,663	665.4	6,665	1,165	1,091	42,163
1987	11	94.21	3,776	2,627	487	6,890	11,331	73	11,965	18,124	36,493	684.2	5,716	541	477	41,668
1988[1]	11	97.71	3,824	2,617	462	6,903	12,222	68	12,900	19,601	38,940	699.3	5,474	884	717	43,530
1989[2]	10	92.73	3,975								38,856	776.8	6,084	1,567		43,373
1990[2]	10	93.50									39,000		6,100	2,000		43,100

[1] Preliminary. [2] Estimate. [3] Values are f.o.b. mine or refinery & do not include cost of cooperage or containers. *Source: Bureau of Mines* T.582

Salt Sold or Used by Producers in the U.S. by Classes & Consumers or Uses In Thousands of Short Tons

Year	Chemical[4]	Tanning Leather	Textile & Dyeing	Meat Packers[2]	Canning	Baking	Agri. Distribution	Feed Dealers	Feed Mfgs.	Rubber	Oil	Paper & Pulp	Metal Processing	Water Treatment	Grocery Stores	Water Conditioning Distal.	Ice Control &/or Stabilization
1984	19,701		135	436	242	124		923	590	41	860	307			859		
1985	21,204	137	186	415	263	126	387	863	412	36	965	311	382	553	901	888	11,180
1986	19,801	152	226	436	271	134	286	940	388	133	627	307	304	525	946	1,028	10,541
1987	18,715	124	237	452	296	158	302	995	416	145	597	387	311	392	1,007	1,063	9,878
1988[1]	20,734	123	229	460	278	152	353	998	437	27	819	376	374	463	955	1,051	11,125
1989[1]		116	233				584	893	400	34	720	373	400	329	970	970	11,461

[1] Preliminary. [2] Prior to 1984, data also includes tanners & casing mfg. [3] Also service companies. [4] Chloralkali producers & other chemical.
Source: Bureau of Mines T.583

Sheep & Lambs

U.S. lamb and mutton production in 1990 was 359 million pounds, up 5 percent for the year. Lamb and yearling slaughter rose by about 5 percent for the year, but mature sheep slaughter was down. This indicated that the low level of lamb prices did not result in high culling in the breeding stock. Lamb and yearling slaughter increased by about the same percentage as the 1990 breeding flock, indicating that the retention of ewe lambs for the breeding flock was about normal. Both of these factors suggested that the breeding flock on January 1, 1991 would be practically unchanged from a year earlier.

Prices for slaughter lambs at San Angelo, Texas reached $63.69 per hundredweight in March of 1990 and then fell, averaging $48.[illegible]8 in December. It appeared that the lamb market had become saturated and that consumers were unwilling to purchase additional production, except at sharply lower prices. Lamb production is geared to meet demand during the spring religious holidays.

Lamb and mutton production in 1991 was expected to be about 363 million pounds, up by a little more than 1 percent, according to the USDA.

World Sheep Numbers in Specified Countries In Millions of Head

Year	Argentina	Australia	[illegible]	China[4]	France	India	Italy	New Zealand	Romania	Spain[2]	South Africa	Turkey	United Kingdom	United States	Uruguay	USSR	World
1983	33.5	133.2	[illegible]		12.1	49.5	9.3	70.3	16.9	17.5	32.0	47.5	22.9	12.1	23.3	142.2	669
1984	33.9	139.2	11.6		11.9	51.1	10.7	70.3	18.5	17.6	31.3	47.7	23.3	11.5	23.3	145.3	681
1985	29.4	149.7	10.5		11.6	52.8	11.1	69.7	18.6	17.5	30.3	47.8	23.9	10.4	22.8	142.9	686
1986	29.2	155.6	9.7		11.2	54.5	11.3	67.9	18.6	17.3	29.5	47.0	24.5	10.0	24.8	140.9	690
1987	29.0	158.8	9.6	166.2	10.6	55.5	11.5	69.2	18.8	17.6	29.8	43.5	26.0	10.3	25.7	142.2	862.5
1988	29.2	162.5	8.9	180.3	10.4	51.7	11.5	64.2	18.9	20.3	29.6	40.0	27.8	10.9	27.4	140.8	854.4
1989	29.3	174.9	8.6	201.5	11.5	53.5	11.6	64.4	16.2	23.8	30.9	34.9	29.0	10.9	28.4	140.7	890.4
1990[1]	28.6	187.4	7.8	211.0	11.5	54.6	11.7	60.6	15.4	26.2	32.7	31.5	29.5	11.4	28.4	140.5	908.7
1991[3]	26.9	186.7	7.1	236.0	11.6	55.7	11.7	58.3	16.5	27.4	33.9	29.3	30.7	11.5		138.5	929.5

[1] Preliminary. [2] One year old & older. [3] Estimate. [4] Mainland includes goats. *Source: Foreign Agricultural Service, U.S.D.A.* T.584

Salient Statistics of Sheep & Lambs in the United States Avg. Lv. Weight

Year	On Hand Jan. 1 (Mil. Head)	Lamb Crop (Mil. Head)	In Shipments (Ths. Head)	Marketings[2] (Ths. Head)	Slaughter Farm (Ths. Head)	Slaughter Total[4] (Ths. Head)	Production Mil. Lbs.	SH.&LB. Federally Inspected in Ths.	Value of Production (Millions of Dollars)	Cash Receipts[3] (Millions of Dollars)	Value of Home Consumption (Millions of Dollars)	Gross Income (Millions of Dollars)	Farm Value (1/1) All	Farm Value (1/1) $ per Head
1983	12.1	8.2	1,838	8,924	171	6,792	767.6	6,412	356.7	426.4	10.6	437.0	628.6	51.80
1984	11.6	7.8	1,859	8,828	141	6,900	694.1	6,549	376.5	466.5	11.1	477.7	598.9	58.10
1985	10.7	7.5	1,693	8,047	135	6,300	694.2	5,976	427.8	503.2	12.8	516.0	637.9	61.10
1986	10.1	7.4	1,792	7,394	128	5,762	721.5	5,464	443.9	483.8	12.7	496.5	6[illegible].0	67.40
1987	10.6	7.3	1,814	7,256	113	5,312	728.9	5,042	489.1	546.1	13.1	559.2	[illegible]82.1	75.70
1988	10.9	7.2	1,531	7,334	99	5,392	703.2	5,12[illegible]	418.6	473.4	10.6	484.1	985.0	90.00
1989[1]	10.9	7.7				5,572		5,[illegible]					894.9	82.40
1990[5]	11.4	7.7						[illegible]					901.5	79.30
1991[5]													734.9	65.60

[1] Preliminary. [2] Excludes interfarm sales. [3] Includes receipts from marketings and from sales of farm slaughter meats. [4] Includes all commercial & farm. [5] Estimate. *Source: Crop Reporting Board, U.S.D.A.* T.585

Sheep and Lambs on Farms in the United States, January 1 Thousands of Head

Year	All Sheep and Lambs[2] Minnesota	California	Colorado	Idaho	Missouri	Montana	New Mexico	Ohio	South Dakota	Texas	Utah	Wyoming	Iowa	Total[2]	Total[1] Stock
1983	300	1,115	750	429	126	560	610	295	680	2,225	590	1,060	457	12,140	10,479
1984	225	1,115	690	383	128	564	589	265	740	1,970	568	1,090	425	11,487	9,769
1985	255	1,065	675	313	123	515	538	265	639	1,810	515	860	360	10,443	8,847
1986	213	1,065	600	320	101	423	525	275	540	1,810	484	819	350	9,983	8,491
1987	237	980	690	314	110	523	480	300	605	1,930	464	775	375	10,334	8,826
1988	258	990	755	324	103	530	489	270	610	1,960	478	865	405	10,945	9,364
1989	290	940	825	287	125	600	516	246	590	1,870	503	837	420	10,858	9,212
1990[3]	285	1,000	840	286	138	663	495	270	590	2,090	509	805	490	11,363	9,601
1991[3]	300	1,015	710	272	134	683	462	305	640	2,000	508	830	465	11,2[illegible]	9,471

[1] Stock sheep & lambs; does not include sheep & lambs on feed for market. [2] Includes sheep & lambs on feed for market and stock sheep & lambs. [3] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.586

Average Wholesale Price of Slaughter Lambs (Choice) at San Angelo[1] Texas In Dollars Per 100 Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	60.50	58.75	58.75	60.50	62.25	61.75	61.50	62.76	63.58	63.35	62.98	60.08	61.39
1985[1]	65.12	67.58	70.12	72.50	73.32	70.97	71.50	71.69	69.75	67.25	64.17	59.33	68.61
1986	65.81	67.50	63.58	74.22	81.25	77.36	73.84	68.12	66.38	59.65	65.42	73.33	69.71
1987	78.56	75.75	86.50	93.12	94.50	84.83	76.83	71.83	70.05	66.25	65.00	73.83	78.09
1988	83.53	77.25	83.75	76.50	72.67	59.38	59.00	56.19	59.50	63.94	65.55	68.83	68.26
1989	68.13	68.83	70.90	78.17	73.56	72.63	67.79	67.28	63.81	59.63	56.06	61.00	67.32
1990	54.80	60.38	63.69	63.13	62.25	53.56	53.25	51.20	51.75	52.50	50.42	48.08	55.42

[1] Prices prior to 1985 are for lambs (average) at Omaha. *Source: Economic Research Service, U.S.D.A.* T.587

Federally Inspected Slaughter of Sheep & Lambs in the United States In Thousands of Head

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	540	548	586	592	558	500	511	561	528	588	524	514	6,549
1985	544	473	564	512	494	423	485	496	480	554	460	490	5,976
1986	507	441	524	477	417	406	432	426	495	495	401	442	5,464
1987	418	390	432	477	363	407	411	400	459	446	399	439	5,042
1988	380	408	535	388	414	413	387	442	452	437	418	447	5,122
1989[1]	418	415	505	393	435	423	398	476	440	468	467	457	5,295
1990[1]	479	431	481	466	465	426	430	463	422	490	465		

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.588

Cold Storage Holdings of Lamb and Mutton, on 1st of Month In Thousands of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1984	10,701	8,312	7,542	8,057	9,123	8,839	8,678	8,404	8,026	8,889	8,403	7,890
1985	7,066	7,339	6,840	6,547	7,644	8,068	8,931	9,193	9,541	9,237	10,033	12,525
1986	12,766	11,615	13,813	11,615	12,754	12,742	14,068	14,318	15,459	14,450	14,641	[illegible],843
1987	12,603	11,550	13,565	13,595	13,248	13,997	12,007	9,311	8,468	6,978	7,036	8,637
1988	7,949	8,069	6,190	7,056	7,639	8,018	8,738	8,537	7,253	6,827	6,396	6,001
1989	6,115	7,267	6,487	6,619	6,558	6,827	8,003	7,841	7,731	7,057	7,707	7,990
1990[1]	7,625	7,844	8,468	7,905	7,810	8,052	9,685	10,107	9,144	8,929	8,458	7,210

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.589

Average Price Received by Farmers for Sheep in the U.S. In Dollars per 100 Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct	Nov	Dec.	Average[1]
1984	18.20	19.80	18.70	16.30	13.00	13.80	16.80	17.30	15.90	15.20	18.10	24.30	16.40
1985	26.50	26.50	26.20	24.70	23.00	22.00	27.20	26.10	25.30	21.50	23.60	26.60	23.90
1986	29.90	26.10	22.80	24.90	24.10	25.90	26.70	26.40	27.30	25.50	26.10	29.30	25.60
1987	31.60	32.20	30.70	28.60	28.30	25.70	28.50	32.00	32.50	31.50	30.90	32.30	29.50
1988	34.70	30.10	29.70	26.00	23.90	23.20	25.00	25.30	25.00	25.30	27.80	29.10	25.60
1989	34.20	35.70	30.30	25.40	21.60	22.20	24.60	23.40	23.10	22.70	29.50	31.10	24.40
1990[2]	32.20	30.90	30.00	23.50	19.70	19.60	24.70	24.30	18.90	20.00	20.40	22.40	23.90
1991[2]	27.40												

[1] Weighted average by quantities sold. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.590

Average Price Received by Farmers for Lambs in the U.S. In Dollars per 100 Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average[1]
1984	60.00	59.20	58.20	60.60	59.50	57.50	58.60	61.00	61.80	62.40	63.30	61.90	60.10
1985	63.40	66.70	68.00	68.40	72.40	69.70	70.80	70.80	70.20	67.80	66.00	62.70	67.70
1986	63.90	67.00	64.90	69.10	76.40	74.00	71.90	69.50	67.60	62.50	69.30	73.20	69.00
1987	76.60	76.00	80.80	86.10	90.10	83.50	78.70	76.10	76.80	71.90	65.70	72.80	77.60
1988	80.70	80.40	80.20	74.80	72.60	60.20	60.00	59.80	64.20	66.20	66.30	68.60	69.10
1989	67.40	68.40	72.50	75.20	73.10	70.60	68.60	66.60	65.90	62.00	58.70	59.00	66.10
1990[2]	56.40	59.80	66.00	62.90	59.80	55.40	54.40	54.00	52.80	52.00	50.10	48.60	56.00
1991[2]	48.60												

[1] Weighted average by quantities sold. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.591

Silver

After diving to a 15-year low of $3.93/oz. (basis the Handy & Harman price) on December 17, 1990, silver crawled back up over $4.00. Still, at its year-end close of $4.17, silver had lost 19 percent of its value during 1990, despite a collapsing dollar, CPI inflation that topped 6 percent for the first time since 1982, and Iraq's invasion of Kuwait.

This performance was not out of line with silver's long-run track record as an investment. According to a study by Roger Ibbotson (president of Ibbotson Associates, publishers of standard reference sources for investment rates of return), silver was the worst-performing investment among all asset classes between January 1, 1975, and July 31, 1990. Silver had the lowest compound annual return, 1.1 percent, compared with 8.2 per cent for T-bills and 16.6 percent for common stocks. Silver also had the highest annualized standard deviation of monthly returns, 38.2 percent, compared with 15.8 percent for common stocks and 0.8 percent for T-bills.

Although low prices forced some silver mines to close or curtail production, U.S. mine output of silver was virtually unchanged in 1990 at 64.3 million ounces, compared with 64.5 million in 1989, according to the Bureau of Mines. Some mines remained profitable because of lower-cost extraction methods adopted over the previous decade.

But the bulk of the world's mine production comes as a byproduct of other metals. While prices for copper, lead, zinc and gold retreated in 1990, they were high enough to keep mines operating. The cost of recovering silver from those mines is often minimal, since silver would be separated from the other metals in any case.

The largest silver producer in the U.S. in 1990 was believed to be the Greens Creek zinc mine on Admiralty Island, west of Juneau, Alaska, which opened in 1989. Another Alaskan zinc mine, the Red Dog, 60 miles north of the Arctic Circle, reportedly grades out at 12 ounces of silver per tonne of ore. At full production, it could yield 2.5 million ounces of byproduct silver, and like many gold and copper mines, the Red Dog's silver is not needed to carry the mine's costs of production.

About two-thirds of the world's estimated silver reserves of 9 billion ounces is associated with copper or lead-zinc ores. The Bureau of Mines expected world 1990 production to rise to 469.4 million ounces from 464.5 million in 1989. Mexico remained the largest producer, with 80.4 million ounces, which was up by more than 8 percent from 74.1 million in 1989. Because of continued labor strife and political turmoil, Peruvian output fell to 57.9 million ounces from 59.2 million in 1989.

U.S. apparent silver demand (defined as refinery production from primary materials and old scrap and net imports of bullion) declined by 15.5 percent in 1990 to 138.2 million ounces. The Bureau of Mines stopped reporting industrial silver usage in 1988 because of some problems with its survey. Domestic coinage fell to 7.7 million ounces from 8.5 million. Industry analysts estimated that 50 percent of the refined silver consumed domestically during 1990 went into photographic products; 25 percent, electrical and electronic products; 10 percent, electroplate, sterlingware and jewelry, 5 percent, brazing alloys; and 10 percent, other uses, including dentistry.

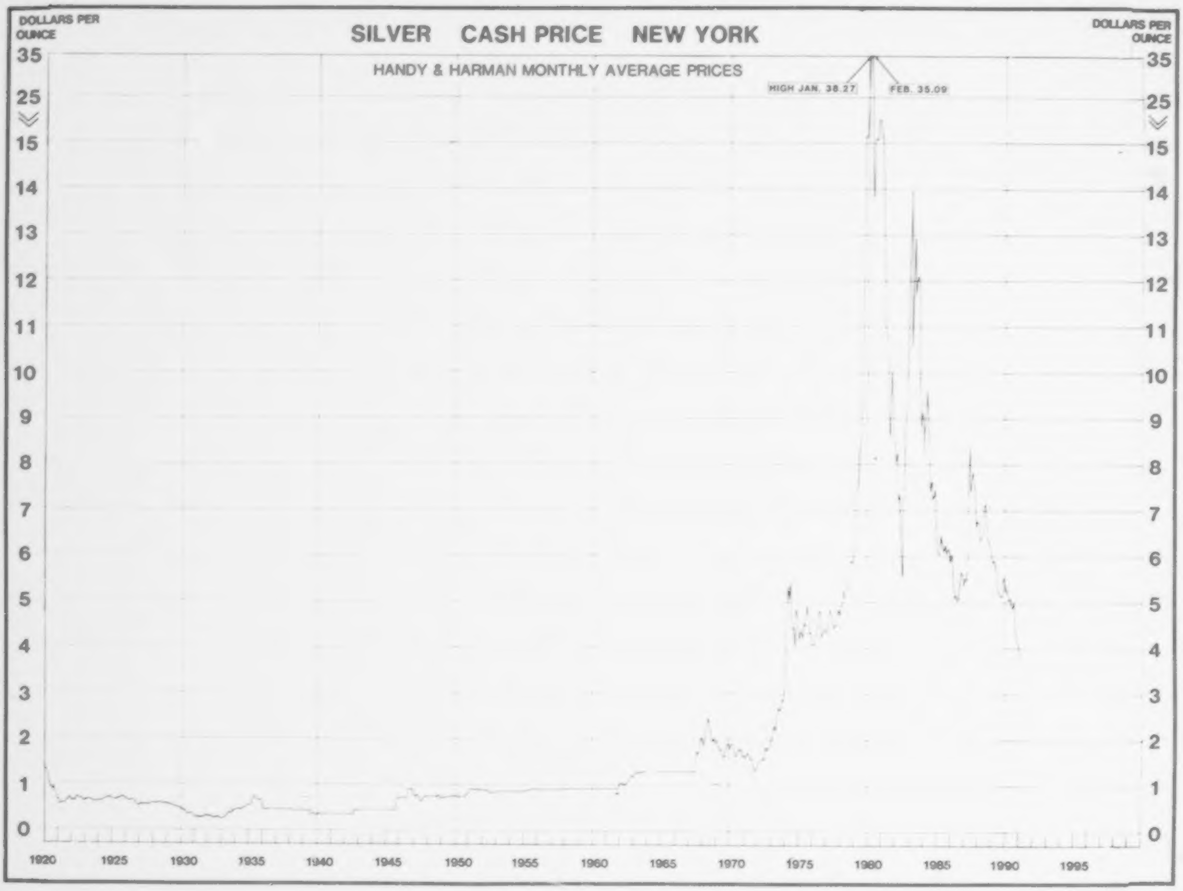
Futures Markets

Silver is traded on the New York Commodity Exchange (COMEX), which also has options on silver futures, and on the Chicago Board of Trade, the Mid-America Exchange, and in Winnipeg.

World Mine Production of Silver, by Selected Countries In Metric Tons[4] (2,204.6 lbs.)

Year	Argentina	Australia	Bolivia[1]	Canada	West Germany	Honduras	Japan	Mexico	Morocco	Peru	Poland	United States	USSR[2]	Yugoslavia	Zaire (Congo)	World Total[2]
1976	2.25	25.03	5.34	41.20	1.03	3.18	9.30	42.64	2.05	35.58	17.8	34.33	44.0	4.63	2.47	316.4
1977	2.45	27.53	5.81	42.24	1.06	2.82	9.60	47.03	2.82	39.73	20.7	38.17	45.0	4.68	2.73	331.3
1978	2.16	26.12	6.29	40.73	.80	2.79	9.66	50.78	3.13	37.02	21.9	39.39	46.0	5.13	4.39	345.0
1979	2.21	26.76	5.74	36.87	1.04	2.43	8.68	52.17	3.28	39.25	22.6	37.90	46.0	5.21	3.89	348.1
1980	2.36	24.65	6.10	33.34	1.06	1.77	8.60	50.05	3.15	44.42	24.63	32.33	46.0	4.79	2.73	[illegible]
1981	2.52	23.91	6.39	36.30	1.13	1.82	9.01	52.92	2.12	46.94	20.58	40.68	46.5	4.44	2.58	[illegible]
1982	2.68	29.16	5.47	42.25	1.28	2.10	9.84	59.18	2.64	41.96	21.12	40.25	46.9	3.34	1.75	371.2
1983	2.50	33.21	6.03	35.56	1.17	2.59	9.88	63.61	2.85	50.48	21.80	43.43	47.2	3.99	1.29	387.7
1984	1.98	31.26	4.56	42.66	1.23	2.70	10.40	75.34	2.41	53.08	23.92	44.59	47.4	4.05	1.23	[illegible]
1985[4]	68	1,086	111	1,197	38	86	339	2,153	85	1,814	831	1,227	1,490	156	43	13.051
1986	66	1,023	95	1,088	28	54	351	2,303	49	1,926	829	1,074	1,500	177	34	12,970
1987	60	1,119	142	1,375	31	23	281	2,415	44	2,054	831	1,241	1,500	165	37	13,757
1988[3]	79	1,118	232	1,371	31	58	252	2,359	226	1,552	1,063	1,661	1,490	139	24	14,167
1989[3]	78	1,000	367	1,285	31	60	156	2,306	225	1,840	1,060	2,007	1,490	140	20	14,452
1990[2]				1,300				2,500		1,800		2,000	1,500			14,600

[1] Exports. [2] Estimate. [3] Preliminary. [4] Data prior to 1985 are in millions of troy ounces. *Source: Bureau of Mines* T.594



Average Price of Silver in New York (Handy & Harman) In Cents per Troy Ounce (.999 Fine)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1973	201.7	223.6	230.9	220.7	240.1	262.1	270.6	263.7	267.5	288.6	286.0	313.7	256.0
1974	363.7	535.9	532.6	503.6	543.2	489.6	441.6	443.1	404.9	483.0	469.4	439.1	470.8
1975	419.3	437.0	434.5	420.9	453.8	448.9	470.5	492.5	451.6	432.9	433.2	408.5	442.0
1976	406.3	408.6	418.9	435.1	448.9	481.2	478.0	423.7	429.5	422.5	437.3	434.7	435.4
1977	440.9	452.7	484.2	477.7	469.2	444.3	449.8	444.4	453.9	476.3	482.8	470.6	462.3
1978	493.4	493.6	526.8	511.6	512.0	531.6	533.1	549.5	557.5	591.8	586.5	593.0	540.0
1979	625.5	741.7	745.4	749.3	836.6	853.8	913.5	933.4	1,395.9	1,678.1	1,655.3	2,179.3	1,109.0
1980	3,827.2	3,508.5	2,413.3	1,384.1	1,253.3	1,574.8	1,606.0	1,589.7	2,014.4	2,018.1	1,864.8	1,639.3	2,063.3
1981	1,475.2	1,306.5	1,236.9	1,091.7	1,084.8	1,000.1	863.1	892.3	1,003.6	925.1	854.7	843.2	1,048.1
1982	803.1	826.8	721.3	731.1	667.4	557.8	649.7	713.6	872.5	948.8	991.8	1,058.6	795.0
1983	1,239.6	1,396.4	1,061.9	1,169.4	1,295.3	1,174.9	1,208.8	1,209.6	1,191.5	984.1	883.7	912.1	1,143.9
1984	818.2	912.7	965.1	922.1	897.2	874.4	741.6	761.3	726.3	731.7	748.9	669.4	814.1
1985	609.8	607.0	601.4	645.8	628.1	617.2	610.4	624.7	605.4	618.8	613.4	588.8	614.2
1986	605.3	587.4	503.9	522.9	511.5	515.3	504.9	521.8	568.3	566.7	559.6	536.4	547.0
1987	552.88	548.76	568.16	742.79	843.90	741.09	767.84	784.74	759.05	755.80	666.18	679.02	700.85
1988	673.25	632.48	641.28	647.83	654.26	703.68	714.65	670.80	636.48	628.45	627.53	610.83	653.46
1989	597.17	589.08	592.98	579.08	544.70	528.02	523.65	517.93	513.30	513.30	546.53	554.28	550.00
1990	524.30	527.84	505.82	504.58	507.39	490.60	485.90	498.15	479.03	436.59	416.90	406.84	482.00
1991	402.82	372.34											

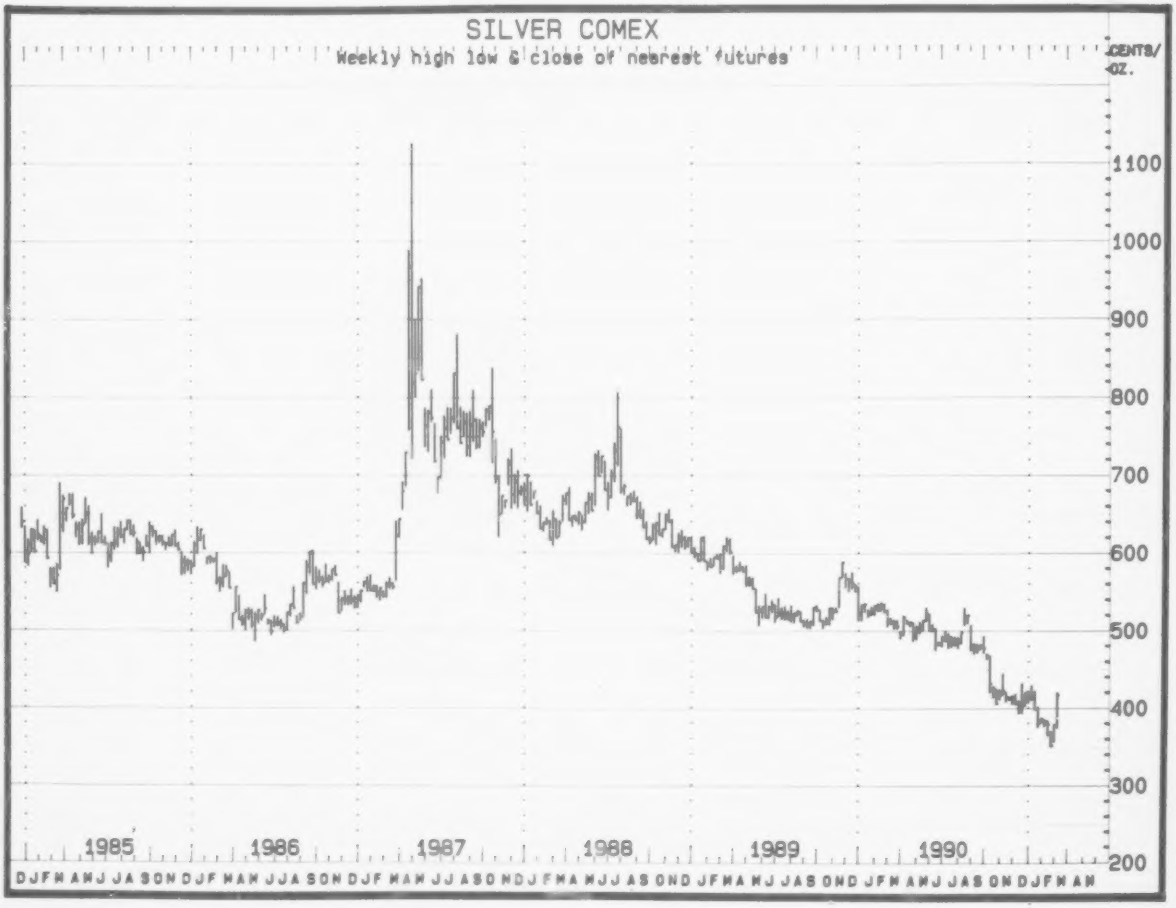
Source: Handy & Harman

T.595

World^2 Silver Consumption In Millions of Troy Ounces

	Industrial Uses									Coinage							
Year	Canada	France	W. Germany	India	Italy	Japan	Un. Kingdom	United States	World Total	Canada	France	W. Germany	Austria	Mexico	United States	World Total	World Total
1973	8.6	14.3	64.7	13.0	41.5	69.0	31.0	195.9	477.8	1.4	.1	9.5	6.6		.9	29.2	507.0
1974	9.6	15.5	59.9	15.0	38.6	46.5	25.0	177.0	409.4	8.9	.1	8.8	5.6		1.0	27.9	436.9
1975	10.6	21.2	38.9	13.0	28.9	46.4	28.0	157.7	376.8	10.4	5.2	4.3	13.4	—	2.7	38.8	415.6
1976	9.5	19.0	50.8	18.0	32.1	60.7	28.0	170.5	437.5	8.4	6.7	2.9	6.9	—	1.3	29.7	467.2
1977	8.8	20.6	59.5	17.6	33.8	63.2	32.2	153.6	433.6	.3	6.9	2.6	3.0	4.2	.4	23.4	457.0
1978	9.0	22.2	47.2	20.0	41.8	64.8	29.0	160.2	442.6	.3	11.1	3.6	4.5	6.3	.1	36.3	478.9
1979	8.1	21.5	46.1	19.0	31.1	66.4	26.5	157.2	434.2	.3	7.7	3.7	5.0	5.0	.1	27.8	462.0
1980	8.7	20.2	29.1	19.0	21.8	61.7	20.5	124.7	354.5	.2	—	—	4.3	6.1	.1	13.7	368.2
1981	9.4	20.6	33.8	19.0	12.9	59.8	18.5	116.6	344.0	.2	—	—	3.0	—	—	9.0	353.0
1982	9.0	18.6	35.9	16.1	9.6	63.2	20.0	118.8	345.4	.3	—	—	4.0	—	2.5	12.8	358.2
1983	8.9	18.6	30.3	12.9	9.0	71.5	18.0	116.3	340.7	.4	—	—	2.0	—	11.2	18.2	358.9
1984	9.0	17.0	30.1	16.1	11.6	78.7	19.0	114.8	353.3	.3	—	—	—	2.0	3.4	8.7	362.0
1985	9.1	18.0	31.7	20.9	[illegible].6	73.7	19.0	118.6	447.1	.3	2.2	0	—	3.0	.4	8.9	456.0
1986	9.6	16.4	36.9	22.5	14.5	89.5	20.5	121.7	495.1	2.0	2.4	0	1.0	2.0	7.5	16.9	512.0
1987	10.4	19.6	40.5	18.5	24.4	92.2	21.5	118.5	496.5	1.2	2.3	5.2	2.0	2.3	15.1	30.0	526.5
1988	10.8	22.5	47.2	22.5	18.0	103.9	22.3	120.0	536.0	2.0	2.2	5.2	6.5	1.5	8.8	25.7	561.7
1989[1]	10.9	28.0	45.8	25.7	19.8	102.1	22.5	118.8	546.7	3.3	4.0	9.5		2.0	9.4	34.4	581.1

[1] Preliminary. [2] Non-communist areas only. *Source: Handy & Harman* T.597



U.S. Mine Production of Recoverable Silver In Metric Tons[3]

Year	Arizona	California	Colorado	Idaho	Oregon	Missouri	Montana	Nevada	New Mexico	New York	Tennessee	So. Dakota	Utah	Alaska	Total
1981	8,055	53	3,009	16,546	7	1,837	2,989	3,039	1,632	29	N.A.	56	2,883	2	40,683
1982	6,309	34	1,934	14,830	—	2,241	6,169	3,142	805	27	N.A.	26	4,343	2	40,248
1983	4,492	27	2,146	17,684	1	2,021	5,708	5,179	N.A.	33	N.A.	62	4,567	4	43,431
1984	4,247	N.A.	2,200	18,869	N.A.	1,401	5,653	6,477	N.A.	N.A.	N.A.	50	N.A.	N.A.	44,592
1985[3]	152	4	17	586	—	51	125	154	N.A.	N.A.	N.A.	2	N.A.	N.A.	1,227
1986	140	5	20	349	—	45	148	199	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1,074
1987	114	4	27	N.A.	N.A.	37	185	379	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1,241
1988	152	15	27	340	N.A.	45	192	608	N.A.	N.A.	N.A.	3	N.A.	1	1,661
1989[1]	171	21	N.A.	439	N.A.	53	194	625				4			2,007
1990[1]	180	25	26	450		48	220	615							2,100

[1] Preliminary. [2] Forecast. [3] Data prior to 1985 are in thousands of troy ounces. *Source: Bureau of Mines*

T.599

U.S. Consumption of Silver, by End Use In Thousands of Troy Ounces

Year	Bearings	Brazing Alloys & Solders	Catalysts	Dental & Medical	Electroplated Ware	Electrical & Electronic Products Batteries	Electrical & Electronic Products Contacts & Conductors	Jewelry	Mirrors	Photographic Materials	Sterling Ware	Coins, Medallions[2]	Total Net Industrial Consumption	Coinage	Total Consumption
1981	297	7,718	3,830	1,709	3,904	3,803	26,411	5,368	581	51,025	4,407	2,622	116,670	179	116,849
1982	228	7,384	2,418	1,688	3,254	4,167	27,730	6,260	970	51,769	6,579	1,832	118,840	1,846	120,686
1983	170	5,837	2,424	1,532	3,154	2,800	26,298	6,861	970	51,827	7,022	2,979	116,440	2,128	118,568
1984	260	5,889	2,448	1,569	3,542	2,671	25,633	5,773	970	55,322	3,638	2,564	114,841	2,665	117,506
1985	190	5,593	2,409	1,480	3,660	2,470	27,509	5,779	970	57,895	3,527	2,514	118,555	362	118,917
1986	375	6,467	2,313	1,474	3,724	3,309	27,429	4,666	970	58,554	3,935	3,957	121,743	7,535	129,278
1987[1]	317	7,000	2,474	1,409	3,010	2,413	23,457	4,514	1,000	58,000	3,897	4,194	118,500	15,074	133,574
1988[2]		6,000		Electrical Products				30.0		60,000			120,000	8,840	133,200
1989[3]		6,500			"	"		30.0		59,300			118,800	9,400	172,650

[1] Preliminary. [2] Includes commemorative objects. [3] Estimate. *Source: Bureau of Mines*

T.598

Commodity Exchange, Inc. (COMEX) Warehouse Stocks of Silver In Millions of Ounces

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1981	86.9	86.8	85.4	84.6	85.7	85.1	86.6	85.4	78.8	78.1	76.0	77.3
1982	77.6	76.3	78.5	77.1	79.9	78.0	72.4	66.2	60.0	60.7	59.2	80.6
1983	91.2	90.9	106.4	96.8	91.3	69.8	91.1	93.7	113.6	129.3	129.4	129.6
1984	127.4	123.7	116.8	117.2	115.3	114.3	121.8	120.3	116.2	115.0	113.4	115.4
1985	118.9	121.5	122.3	106.6	106.0	104.2	133.7	140.8	141.0	143.6	149.2	153.7
1986	155.2	142.3	145.9	151.3	154.9	144.6	151.9	150.7	158.6	156.8	138.1	145.1
1987	144.9	150.2	160.0	157.9	157.7	156.1	152.5	151.9	158.6	155.7	154.8	155.8
1988	156.3	156.3	156.9	155.8	161.3	164.3	167.1	169.7	175.6	178.8	175[illegible]	178.5
1989	174.4	179.2	190.6	194.3	200.4	204.1	206.0	207.3	210.4	212.3	22[illegible]	237.9
1990	238.8	240.8	243.4	252.1	253.8	255.4	251.6	251.5	255.8	260.2	258.6	257.7
1991	265.3	266.2	263.8									

Source: Commodity Exchange of New York (COMEX)

T.600

United States Production[1] of Refined Silver from All Sources In Thousands of Troy Ounces

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	12,889	12,000	11,352	11,889	10,402	11,500	10,433	10,114	10,533	9,954	8,105	11,589	130,783
1982	9,043	8,407	10,300	8,856	9,095	8,840	7,781	8,518	7,872	8,307	9,607	11,655	108,252
1983	9,121	8,533	9,063	9,653	7,663	10,210	8,579	8,342	7,886	8,738	9,880	12,058	112,200
1984	7,094	8,414	8,446	9,827	10,423	8,921	8,879	11,226	8,971	8,386	10,200	13,920	116,400
1985	8,414	7,930	8,645	9,238	9,344	9,850	8,578	9,885	8,191	8,429	8,987	11,467	109,000
1986	7,897	7,835	7,340	8,727	7,547	7,129	3,988	6,404	6,932	7,869	8,216	10,197	90,081
1987	8,170	6,098	7,047	7,946	8,473	7,839	8,777	7,731	7,703	6,692	6,955	9,024	92,455
1988	7,852	7,264	9,453	7,956	7,891	9,453	10,562	9,903	7,374	8,074	9,545	9,726	105,053
1989	10,025	9,488	9,883	9,650	12,006	8,956	7,722	9,337	7,978	7,901	10,099	8,999	
1990	8,938	7,839	7,106	8,725	8,571	8,819	8,230	7,747	7,619				

[1] Output of commercial bars .999 fine, including U.S. Mint purchases of crude. Production is from both foreign and domestic silver.

Sources: American Bureau of Metal Statistics; The Silver Institute, Inc.

T.603

SILVER

Highest and Lowest Prices of December Silver Futures at New York (Comex) In Dollars per Ounce

Year of Delivery		Yr. Prior to Delivery		Delivery Year												Life of Delivery Range
		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1982	High	10.700	10.150	9.490	9.860	8.820	8.390	7.540	6.680	7.720	8.660	9.975	10.070	11.010	11.180	17.975
	Low	9.110	9.040	8.730	8.650	7.600	7.350	6.670	5.110	5.800	6.320	7.700	8.020	8.950	10.020	5.110
	Close	9.280	9.185	9.182	8.622	7.870	7.470	6.675	6.406	6.965	8.040	8.240	10.090	10.090	11.140	—
1983	High	11.900	12.350	15.238	16.070	12.180	13.380	14.420	13.320	13.110	13.250	12.740	10.780	9.860	10.040	16.070
	Low	9.900	11.070	11.840	12.666	10.710	11.440	12.680	11.513	11.720	11.750	11.010	8.630	8.320	8.440	6.146
	Close	11.090	11.910	15.238	12.666	11.382	12.715	13.640	12.055	12.225	12.410	11.070	8.630	9.620	8.810	—
1984	High	10.860	11.100	9.780	10.730	10.970	10.490	9.970	10.130	8.739	8.390	7.900	7.865	7.900	17.165	17.550
	Low	9.220	9.400	8.470	9.290	9.930	9.465	9.110	8.700	7.060	7.200	7.120	7.120	6.950	6.245	6.245
	Close	10.649	9.867	9.329	10.420	10.541	9.555	9.835	8.817	7.274	7.660	7.620	7.280	7.019	6.573	—
1985	High	8.745	7.850	6.930	6.850	7.250	7.200	7.015	6.740	6.615	6.630	6.320	6.530	6.318	6.120	12.300
	Low	7.700	6.800	6.300	5.930	5.900	6.440	6.180	6.200	5.990	6.230	5.960	6.075	6.040	5.700	5.700
	Close	7.736	6.860	6.832	6.059	7.106	6.480	6.392	6.309	6.460	6.370	6.095	6.125	6.077	5.865	—
1986	High	6.840	6.650	6.830	6.450	6.140	5.795	5.495	5.660	5.295	5.780	6.120	5.900	5.870	5.515	7.990
	Low	6.540	6.130	6.070	5.930	5.370	5.170	5.030	5.100	5.060	5.150	5.240	5.470	5.200	5.270	5.030
	Close	6.609	6.263	6.443	5.968	5.395	5.342	5.434	5.256	5.214	5.230	5.625	5.680	5.389	5.290	—
1987	High	6.210	5.850	6.030	5.880	6.675	10.148	9.900	8.370	8.585	9.100	8.240	8.620	7.330	7.060	10.148
	Low	5.520	5.580	5.670	5.635	5.695	6.490	7.600	6.850	7.390	7.370	7.370	6.700	6.240	6.560	5.435
	Close	5.717	5.714	5.791	5.707	6.466	8.320	7.920	7.555	8.511	7.530	7.610	6.990	7.037	6.713	—
1988	High	8.000	7.665	7.600	7.070	7.130	7.200	7.080	7.740	8.340	7.150	6.780	6.545	6.590	6.280	10.889
	Low	6.697	7.120	6.830	6.450	6.510	6.620	6.600	6.800	6.850	6.600	6.160	6.196	5.980	6.040	5.980
	Close	7.656	7.203	6.922	6.600	7.085	6.805	6.889	6.918	7.011	6.710	6.225	6.348	6.136	6.088	—
1989	High	7.210	6.850	6.800	6.545	6.700	6.335	6.040	5.780	5.625	5.500	5.430	5.375	5.890	5.740	8.860
	Low	6.570	6.540	6.250	6.250	6.140	5.925	5.320	5.300	5.250	5.160	5.110	5.080	5.171	5.220	5.080
	Close	6.756	6.598	6.287	6.324	6.211	5.951	5.420	5.366	5.431	5.165	5.310	5.218	5.668	5.240	—
1990	High	6.430	6.225	5.800	5.800	5.515	5.535	5.560	5.330	5.180	5.470	5.010	4.820	4.340	4.310	6.
	Low	5.646	5.555	5.525	5.425	5.220	5.170	5.221	4.920	4.920	4.860	4.785	4.055	4.045	3.930	3.930
	Close	6.161	5.617	5.596	5.486	5.260	5.222	5.309	5.073	4.927	4.868	4.832	4.180	4.122	4.093	—
1991	High	4.660	4.520	4.604	4.120											
	Low	4.420	4.230	3.980	3.721											
	Close	4.478	4.496	4.080	3.939											

Source: Commodity Exchange of N.Y. (COMEX)

T.596

Average Total Open Interest of Silver Futures at New York (COMEX) In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1983	39,122	49,642	45,929	49,603	51,481	50,738	42,589	48,332	49,920	51,782	54,999	59,067
1984	62,135	64,640	68,763	72,204	65,424	62,890	61,644	63,700	63,655	66,339	78,744	78,492
1985	82,285	83,773	74,987	75,583	74,587	76,985	71,610	73,325	71,100	81,987	87,775	86,249
1986	82,915	81,670	75,891	79,653	74,781	72,411	67,063	74,916	79,376	81,192	93,567	88,962
1987	93,442	94,823	94,366	114,498	98,917	91,469	82,200	87,131	79,747	84,420	78,669	71,204
1988	76,788	79,031	68,994	66,187	69,137	83,428	84,517	82,793	82,369	85,261	92,026	90,081
1989	93,582	95,876	93,953	99,598	90,996	86,804	83,466	88,886	85,248	88,406	91,459	93,606
1990	94,397	93,713	96,182	96,701	95,784	103,575	99,098	99,668	92,436	91,093	84,181	80,364
1991	91,685	101,352										

Source: Commodity Exchange of N.Y. (COMEX)

T.601

Volume of Trading in Silver Futures at New York (COMEX) In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	502.7	601.4	446.6	452.9	516.1	623.7	454.3	656.5	492.0	569.0	596.9	512.7	6,433
1984	570.8	698.8	695.7	629.9	626.7	587.4	554.7	601.5	431.3	449.2	534.2	362.3	6,698
1985	531.8	488.0	518.4	449.8	424.8	377.9	377.7	388.5	267.7	314.0	332.8	349.9	4,821
1986	394.0	368.9	277.6	438.8	280.1	336.1	187.9	317.8	454.6	286.7	338.9	168.2	3,850
1987	247.3	248.0	343.2	932.7	438.6	486.4	378.7	502.7	390.3	468.1	355.9	263.7	5,056
1988	274.1	301.1	348.9	313.9	341.1	726.9	638.9	411.7	299.9	268.4	475.4	264.4	4,665
1989	317.2	408.5	447.3	354.2	278.5	484.7	272.3	360.4	224.9	261.1	622.1	345.4	4,377
1990	343.2	413.3	210.2	364.1	328.8	433.8	242.3	524.8	201.3	308.4	323.7	219.8	3,914
1991	309.8	420.1											

Source: Commodity Exchange of N.Y. (COMEX)

T.602

Soybean Meal

World soybean meal production in 1990/91 was estimated by USDA at just over 71 million tonnes, 2 percent more than a year earlier. Soymeal comprises 59 percent of world protein meal output, and is integral to livestock, dairy, and poultry rations as an efficient source of protein. The U.S. is the leading producer, followed by Brazil, Argentina, and the European Community (EC).

Soymeal consumption continued to expand and was expected to reach 71.6 million tonnes worldwide in 1990/91, 2 percent more than the previous season. Demand was strongest in the U.S., which used over 20.6 million tonnes. The EC's usage was forecast to be above 18 million tonnes. Brazil and Argentina consume relatively small amounts of their meal production, preferring to export it. In the USSR, efforts to increase livestock and poultry production were expected to boost meal usage to 5 million tonnes in 1990/91. Eastern European countries consumed about 5 million tonnes, and their imports were likely to grow as consumers added more meat to their diets.

Meal demand in China, Taiwan and South Korea has expanded, because as incomes increase in developing countries, consumers purchase more livestock, poultry, and dairy products.

Globally, soymeal exports were forecast to rise by 4 percent to nearly 26.5 million tonnes in 1990/91. While Brazil's shipments were slated to fall by 12 percent to 8.2 million tonnes, Argentina's were forecast to rise by 26 percent to 6 million tonnes. EC exports were put at 4.2 million tonnes, up 1 percent. The EC was also a major buyer of soymeal. Other large importers were the USSR and Eastern European countries. The USSR was expected to purchase 3.7 million tonnes, 34 percent more than a year earlier, with much of that from the U.S.

U.S. soymeal production was estimated at a record 28.5 million short tons, almost 3 percent above a year earlier. Profitable crushing margins in a period of expanding demand explained the increase. Stocks at the beginning of the season were 318,000 tons, 80 percent above the previous year. The total supply of soymeal was expected to be 28.8 million tons, 3 percent more than in 1989/90. Domestic use was forecast to rise slightly to 23 million tons. Hog farrowings were expected to increase, while livestock prices remained strong. Feed profitability ratios indicated that meal demand would continue to be firm.

U.S. soymeal exports were forecast to rise by 9 percent to 5.5 million tons, the highest since the 1987 season. The USSR has emerged as the largest market for U.S. meal, buying an average 1.5 million tons a year. The Soviets were expected to be active buyers in 1990/91, despite severe financial difficulties. Other major U.S. markets were Canada, Algeria, Venezuela and Iraq. Because of the trade embargo against Iraq, U.S. exporters were under pressure to find new markets in 1990.

Domestic ending stocks of sorghum were expected to be 300,000 tons, 6 percent less than a year earlier.

Futures Market

Soybean meal futures and options are traded on the Chicago Board of Trade.

World Soybean Meal Supply & Distribution In Thousands of Metric Tons

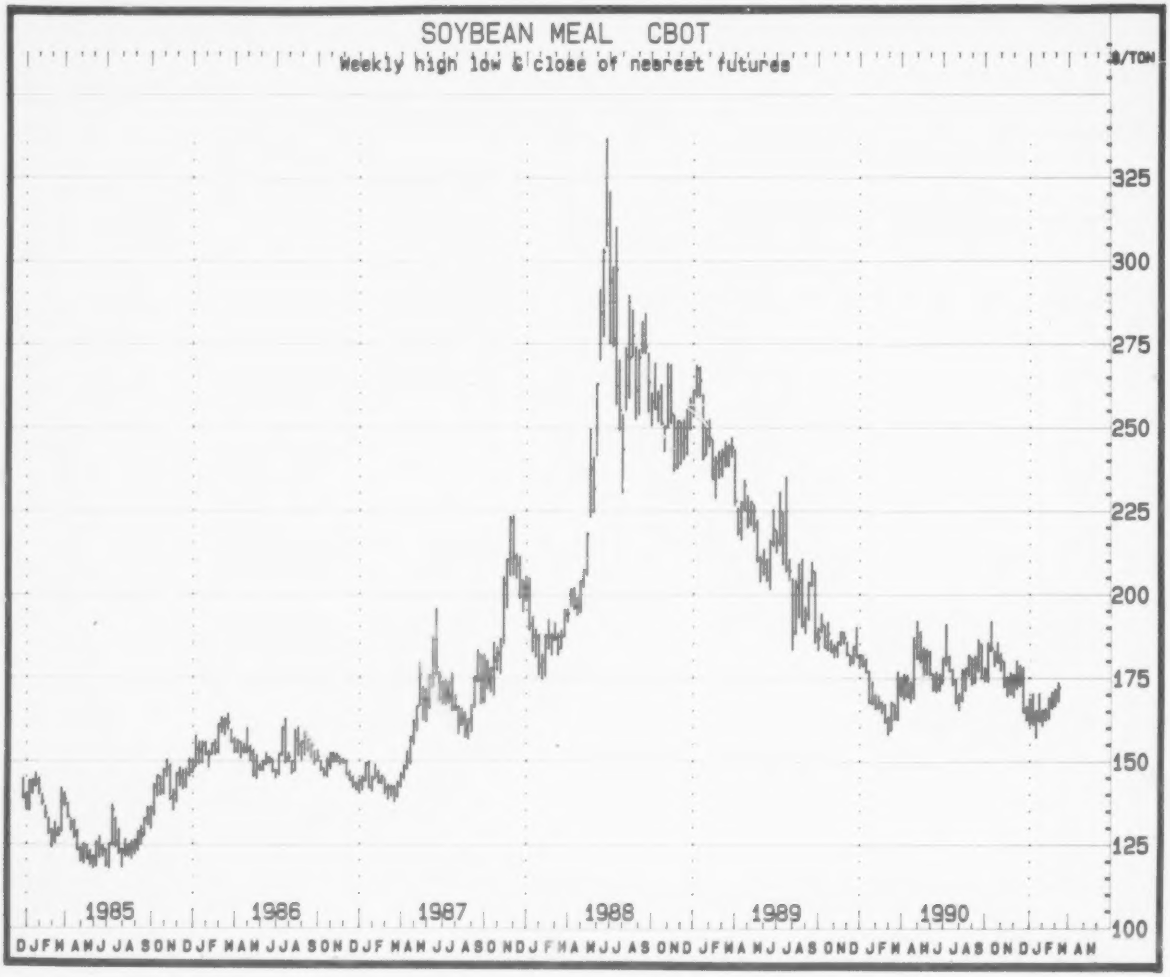
Year Begin Oct. 1	Production					Exports			Imports		Consumption			Stocks		
	Brazil	China	EC-12	United States	Total	Brazil	United States	Total	France	Total	EC-12	United States	Total	Brazil	United States	Total
1985–6	9,690	2,190	10,220	22,635	61,060	7,380	5,476	23,140	3,670	23,950	18,730	17,318	61,790	610	192	2,860
1986–7	11,280	3,000	10,740	25,182	67,210	8,370	6,617	25,940	3,660	26,630	19,240	18,539	67,680	520	218	3,070
1987–8	10,130	3,980	10,390	25,456	67,555	7,350	6,191	25,040	3,110	25,810	17,990	19,344	67,680	970	139	3,720
1988–9	11,360	3,570	9,000	22,628	63,890	8,680	4,781	25,310	2,910	26,780	16,840	17,833	65,850	790	157	3,230
1989–90[1]	12,220	2,980	10,470	25,146	69,610	9,370	4,558	25,790	3,200	26,930	18,600	20,462	70,260	950	288	3,720
1990–1[2]	10,780	3,590	10,090	25,426	69,860	8,100	4,536	25,950	3,600	26,660	18,570	20,865	71,090	830	318	3,190

[1] Preliminary. [2] Forecast. *Source: Foreign Agricultural Service, U.S.D.A.* T.607a

Supply and Distribution of Soybean Meal in the United States In Thousands of Short Tons

Year Begin. Oct. 1	Supply			Distribution			$ Ton Decatur 44% Solvent	$ Tonne		
	For Stocks Oct. 1	Production	Total Supply	Domestic Feed[2]	Exports	Total		Decatur 44% Solvent	Brazil FOB 45–46% Protein	Rotter-dam CIF
1985–6	387	24,951	25,338	19,090	6,036	25,126	154.90	171	175	183
1986–7	212	27,758	27,970	20,387	7,343	27,730	162.70	179	179	191
1987[illegible]	240	28,060	28,300	21,293	6,854	28,147	221.90	245	239	254
1988–9	153	24,943	25,100	19,657	5,270	24,927	233.00	257	239	259
1989–90[1]	173	27,719	27,900	22,558	5,024	27,582	173.75	191	181	204
1990–1[3]	318	28,227	28,550	23,000	5,250	28,250	162.50	181	179	205

[1] Preliminary. [2] Includes small quantities used for industrial purposes, estimated at 30,000 tons annually. [3] Estimate.
Source: Economic Research Service, U.S.D.A. T.606



Stocks (at Oil Mills) of Soybean Cake & Meal in the United States In Thousands of Short Tons

Year	Oct. 1	Nov. 1	Dec. 1	Jan. 1	Feb. 1	Mar. 1	April 1	May 1	June 1	July 1	Aug. 1	Sept. 1
1976–7	354.9	423.5	427.7	353.9	384.7	429.9	412.6	449.0	408.3	390.7	399.0	270.4
1977–8	228.3	270.0	239.8	245.1	251.7	239.7	227.3	308.2	263.3	191.1	262.6	234.1
1978–9	242.9	210.4	178.2	260.5	215.1	198.4	210.4	231.6	207.4	205.3	232.2	140.3
1979–0	224.3	204.1	164.2	207.7	158.7	160.6	219.1	193.9	265.0	262.0	232.4	225.1
1980–1	189.7	211.1	350.0	221.8	209.7	214.4	232.2	184.4	254.0	209.7	156.1	199.7
1981–2	233.8	309.2	314.8	279.4	315.7	324.9	190.3	172.1	309.3	224.9	209.1	189.7
1982–3	175.2	342.8	349.6	332.3	400.2	422.8	341.0	356.1	341.5	272.3	365.2	378.5
1983–4	474.1	419.3	466.8	391.1	475.8	446.7	460.7	418.6	427.2	391.2	355.5	242.7
1984–5	255.4	236.1	285.7	336.8	319.6	334.1	444.6	429.8	495.8	569.6	562.5	458.0
1985–6	386.9	318.4	369.2	358.4	372.4	281.3	386.6	300.8	282.4	278.7	250.6	298.3
1986–7	211.7	218.0	387.3	240.3	311.2	277.5	235.8	244.0	321.7	261.3	292.9	301.3
1987–8	240.2	267.6	311.8	296.2	390.4	304.9	243.7	299.5	255.6	294.4	437.4	264.6
1988–9	153.5	267.8	295.6	353.6	442.3	395.7	237.9	296.8	260.4	218.0	264.9	152.0
1989–90[1]	172.9	220.5	194.3	328.2	254.0	262.0	311.8	307.9	252.6	262.5	267.7	232.0
1990–1[1]	318.3	194.3										

[1] Preliminary. *Sources: Economic Research Service, U.S.D.A.; Bureau of the Census* T.613

U.S. Exports of Soybean Cake & Meal by Country of Destination In Thousands of Metric Tons

Yr. Beg. Oct. 1	Egypt	Venezuela	Canada	Mexico	France	West Germany	Spain	Ireland	Italy	Netherlands	Philippines	Poland	United Kingdom	USSR	Yugoslavia	Total
1984–5	87.0	686.5	489.9	105.8	0	195.9	73.5	16.2	499.0	905.0	195.6	117.2	56.2	0	51.3	4,457
1985–6	200.0	566.8	607.3	81.5	15.0	576.0	74.5	4.7	658.2	1,221	164.0	0	59.7	0	128.8	5,476
1986–7	274.9	628.1	835.1	102.5	53.7	803.5	189.5	40.6	979.7	926.4	124.9	—	73.4	0	124.7	6,661
1987–8	182.0	680.4	681.8	184.0	33.3	177.3	71.2	32.4	554.7	559.9	93.0	26.9	41.6	1,303	88.6	6,191
1988–9	148.4	529.2	591.5	302.3	0	0		5.7	243.5	216.0	61.5		32.1	1,312	59.3	4,781
1989–90[1]	203.8	314.9	561.1	318.8	0	0		1.9	102.3	22.0	122.5		12.7	1,405	41.0	4,558

[1] Preliminary. *Source: Bureau of the Census, U.S. Dept. of Commerce*

T.607

Average Price of Soybean Meal[1] (44% Solvent) at Decatur In Dollars per Short Ton (Bulk)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	201.90	184.40	196.40	190.00	187.40	174.40	157.60	151.60	144.90	141.60	135.20	136.75	166.84
1985	135.25	125.20	125.90	117.90	111.50	110.25	144.00	121.40	130.60	138.30	142.50	145.00	126.43
1986	153.25	152.25	163.70	157.00	157.90	158.90	161.00	163.50	165.20	151.90	154.00	149.60	157.35
1987	146.80	154.40	146.60	159.00	174.90	185.80	181.25	169.90	177.20	185.50	206.60	214.80	175.23
1988	193.75	183.00	191.80	200.40	223.50	287.80	255.60	255.10	264.90	259.75	248.20	246.00	234.15
1989	249.30	234.10	237.10	220.75	214.70	227.50	231.50	215.50	217.10	191.60	183.40	179.40	216.83
1990	172.30	161.90	165.10	165.40	176.20	169.10	171.32	172.40	176.90	172.50	163.00	164.80	169.24
1991	155.70												

Source: Consumer Marketing Service, U.S.D.A.

T.608

Production of Soybean Cake & Meal in the U.S. In Thousands of Short Tons

Crop Year	Production													Meal in Form of Soybeans[2]
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Total	
1983–4	2,288	2,049	2,123	2,220	1,872	2,029	1,760	1,872	1,665	1,629	1,690	1,559	22,756	—
1984–5	2,108	2,326	2,381	2,226	1,887	2,024	1,958	2,101	1,953	1,934	1,832	1,802	24,530	
1985–6	2,218	2,288	2,380	2,344	1,925	2,160	2,008	2,037	1,879	1,977	1,863	1,872	24,951	
1986–7	2,521	2,563	2,527	2,590	2,410	2,489	2,256	2,246	2,135	2,185	1,949	1,888	27,759	
1987–8	2,439	2,668	2,649	2,554	2,377	2,573	2,450	2,340	2,129	2,110	1,873	1,898	28,060	
1988–9	2,236	2,399	2,390	2,360	2,036	2,219	2,127	2,061	1,803	1,749	1,804	1,759	24,943	
1989–90[1]	2,246	2,493	2,520	2,549	2,171	2,432	2,264	2,224	2,183	2,197	2,237	2,187	27,703	
1990–1[1]	2,386	2,513												

[1] Preliminary. [2] Calculated at 47.5 lbs of meal per bushel. *Sources: Economic Research Service, U.S.D.A.; Bureau of Census*

T.609

Average Open Interest of Soybean Meal Futures at the Chicago Board of Trade In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1984	57,781	55,370	58,976	64,182	68,259	65,496	57,019	48,656	46,206	45,207	47,328	42,470
1985	36,754	41,844	43,041	47,011	52,021	51,558	46,193	41,474	44,860	42,197	43,873	43,816
1986	45,678	44,891	49,707	50,860	47,143	52,244	52,615	47,319	51,713	50,974	58,744	58,397
1987	60,584	67,643	65,842	67,193	65,323	66,752	52,442	48,901	52,914	65,831	74,924	75,468
1988	65,643	63,960	61,100	66,950	73,264	80,444	71,643	76,295	80,753	75,439	77,466	71,443
1989	71,792	71,599	67,542	58,923	58,794	64,212	59,547	60,925	59,271	60,038	63,552	57,219
1990	60,010	71,773	74,762	76,897	77,307	69,658	63,824	62,033	58,915	68,888	76,899	70,901
1991	62,172	60,365										

Source: Chicago Board of Trade

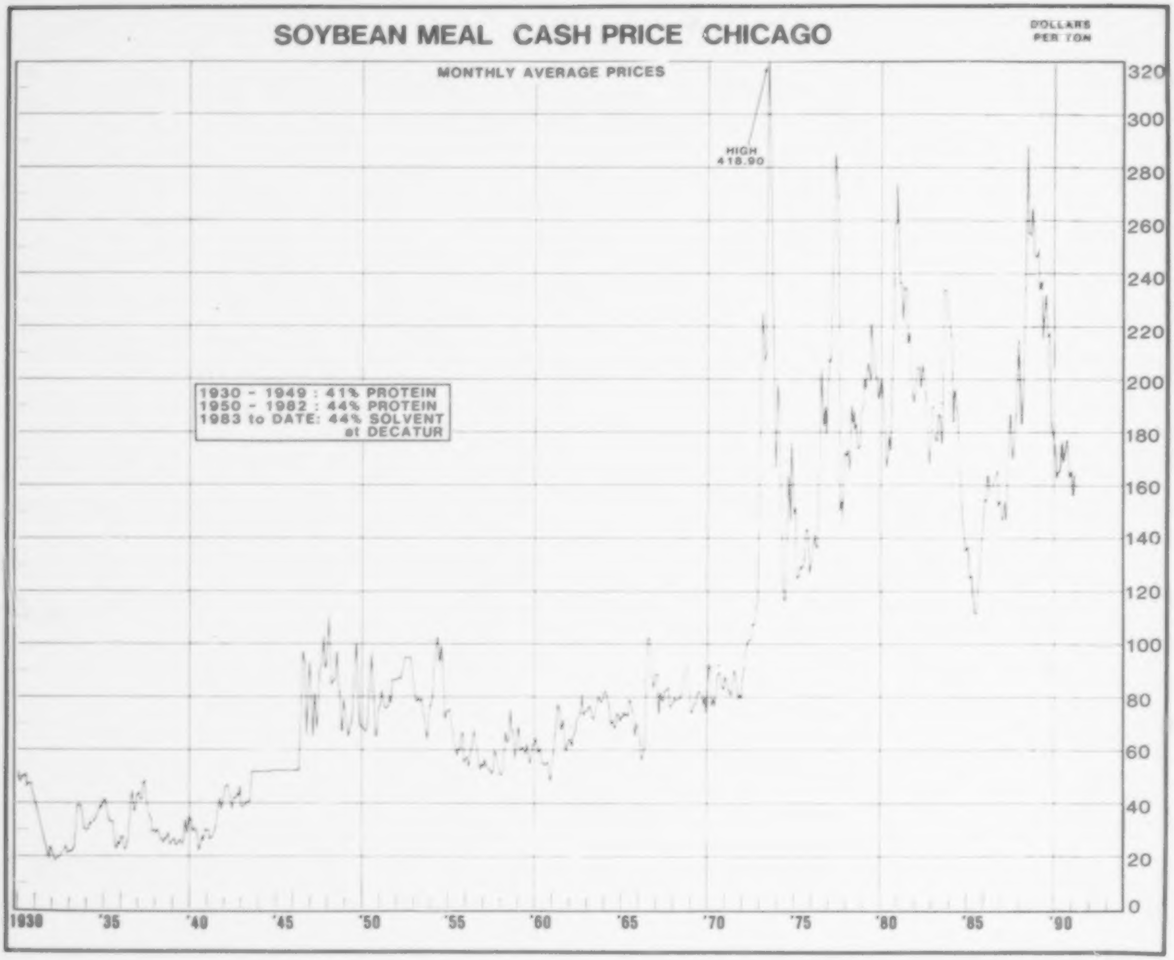
T.610

Volume of Trading of Soybean Meal Futures at the Chicago Board of Trade In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	298.8	283.3	299.6	355.5	449.0	424.0	382.2	307.5	271.2	246.3	266.7	237.3	3,822
1985	252.1	232.6	244.5	283.9	285.0	277.3	420.9	250.7	268.5	287.5	292.3	243.9	3,339
1986	260.2	252.9	218.2	289.3	260.6	242.1	292.5	274.6	222.7	292.3	209.3	234.8	3,049
1987	260.4	211.6	222.6	305.3	353.3	430.1	307.8	247.1	334.7	388.7	385.5	350.9	3,798
1988	393.7	371.5	350.4	396.3	497.3	584.3	482.0	427.7	449.6	446.3	533.1	424.0	5,313
1989	408.1	320.7	382.4	388.8	406.7	403.8	410.7	393.1	382.8	364.8	330.1	294.8	4,487
1990	308.6	276.4	400.2	428.4	421.0	398.3	460.2	435.3	401.6	476.3	448.7	446.5	4,902
1991	323.4	281.8											

Source: Chicago Board of Trade

T.611



High, Low & Closing Prices of May Soybean Meal Futures on the Chicago Board of Trade $ per Ton

Year of Delivery		Year Prior to Delivery										Delivery Year					Life of Delivery Range
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1987	High	—	165.5	169.7	154.0	158.5	155.4	157.1	155.5	151.8	149.0	145.8	143.3	143.5	161.9	179.5	179.5
	Low	—	149.7	152.0	146.5	143.0	148.0	152.1	148.7	148.6	141.5	139.2	135.6	135.8	143.6	158.8	135.6
	Close	—	165.2	153.2	146.5	154.7	155.3	155.0	151.8	149.0	145.5	140.0	136.9	143.1	160.9	168.0	—
1988	High	—	163.5	188.0	199.0	170.0	156.5	167.5	171.0	195.5	196.5	189.5	191.9	195.2	203.7	249.0	249.0
	Low	—	155.0	162.0	168.0	157.0	148.0	154.0	157.2	163.3	177.0	175.5	174.5	179.8	193.5	202.0	148.0
	Close	—	163.5	173.0	169.5	160.2	152.9	163.7	167.2	192.2	185.2	178.1	188.6	193.8	203.5	246.5	—
1989	High	204.5	215.5	241.7	304.0	280.0	260.0	274.0	258.0	262.0	264.0	267.0	249.2	246.7	234.0	227.7	304.0
	Low	200.5	204.0	209.5	239.0	221.5	236.0	245.5	239.0	232.5	236.5	239.0	225.7	226.5	216.0	209.5	200.5
	Close	203.5	214.2	241.7	275.0	233.2	254.0	249.7	247.5	245.7	263.5	247.9	237.7	227.5	221.6	210.2	—
1990	High	223.0	221.7	218.5	200.5	214.5	189.0	188.5	185.3	186.0	185.2	181.8	173.0	176.8	187.0	192.0	223.0
	Low	215.0	209.0	182.5	183.5	181.1	179.0	176.5	174.5	178.5	178.2	169.8	163.8	163.0	167.7	175.8	163.0
	Close	215.0	209.5	184.5	193.0	181.3	184.7	179.5	179.0	184.3	181.4	171.1	166.1	171.7	184.1	178.6	—
1991	High	197.0	204.0	208.0	196.0	205.2	194.0	195.7	198.0	190.5	170.5	178.4	175.2				
	Low	188.0	188.5	192.0	184.5	177.5	175.8	185.5	185.8	179.0	171.8	165.5	166.6				
	Close	194.0	203.0	194.0	196.0	179.5	186.3	189.5	187.4	183.1	173.6	168.3	171.3				

Source: Chicago Board of Trade

T.612

Soybean Oil

World soybean oil production in 1990/91 was likely to rise by 1 percent to 16.1 million tonnes, according to USDA. Of the major vegetable and marine oils, soyoil is the most prominent and accounts for over 27 percent of world output.

The U.S. was the dominant soyoil producer, providing almost 37 percent of worldwide output, and was followed by Brazil and Argentina, which together supplied about 28 percent. The EC's share was almost 14 percent.

World soyoil consumption has trended higher in recent years because of rising populations, higher incomes, and improved diets, and was estimated at 16 million tonnes in 1990/91. Soyoil has found its newest markets in Asia. In industrialized countries, soyoil, which is relatively low in saturated fat, has been replacing ingredients like tallow. Nonetheless, soyoil faces strong competition from oils like canola, which are even lower in saturated fat and considered healthier. Palm oil, priced below soyoil, is in demand in developing countries.

Global soyoil trade in 1990/91 was projected at 3.8 million tonnes, down 4 percent. Soyoil remained the second most widely traded oil, following palm. Exports by the U.S. and Brazil were expected to decline, while shipments by Argentina and the EC were due to rise. Brazilian exports were forecast at 500,000 tonnes, down from 730,000. Argentina's exports were likely to increase slightly to 1.1 million tonnes.

The EC was both an importer and exporter of soyoil. The major importers of soyoil were Pakistan, China, the Soviet Union, and Eastern Europe.

World ending stocks of soyoil were projected to be 1.5 million tonnes, down about 5 percent.

U.S. soyoil production in 1990/91 was estimated at 13.3 billion pounds, 2 percent more than a year earlier. Stocks at the start of the marketing year were 1.3 billion pounds, putting total supplies at 14.6 billion. Imports--a concern in the past--were expected to total only 15 million pounds.

Domestic use of soyoil was put at 12 billion pounds, about the same as a year earlier. Growth in soyoil use has been related to population increases and the level of economic activity. There were worries that a slowing economy in 1990 and 1991 would lead consumers to do more cooking at home. Much of the soyoil used is by restaurants and fast food outlets. Soyoil received a boost during 1990, when several fast food chains announced that they would stop using beef tallow for frying and would switch to vegetable oils.

U.S. soyoil exports were forecast to fall by 8 percent to 1.2 billion pounds, partly because of competition from South American soyoil. Sales to Pakistan, a key customer, were down because of an issue over that country's nuclear weapons program. Most exports of soyoil are made at subsidized prices, and Pakistan, Tunisia, and Morocco have received export assistance. U.S. ending stocks of soyoil were forecast to increase slightly to 1.3 million tonnes in 1990/91.

Futures Market

Soybean oil futures and options are traded on the Chicago Board of Trade.

World Supply & Demand of Soybean Oil In Thousands of Metric Tons

Year Begin Oct. 1	Production				Exports			Imports		Consumption					Stocks[3]	
	Brazil	EC-12	United States	Total	Brazil	United States	Total	India	Total	Brazil	EC-12	India	United States	Total	United States	Total
1985–6	2,350	2,250	5,269	13,850	450	570	3,150	260	3,090	1,940	1,380	470	4,560	13,500	430	1,650
1986–7	2,730	2,360	5,798	15,200	950	538	3,900	360	3,790	1,930	1,460	450	4,915	14,760	782	1,990
1987–8	2,440	2,280	5,885	15,240	610	850	3,840	420	3,720	1,930	1,520	620	4,956	15,020	949	2,090
1988–9	2,740	2,000	5,324	14,560	700	754	3,790	30	3,680	2,140	1,490	410	4,803	14,890	778	1,650
1989–90[1]	2,950	2,300	5,889	15,880	870	614	3,940	30	3,920	2,030	1,530	320	5,481	15,830	592	1,690
1990–1[2]	2,590	2,240	5,954	15,880	550	499	3,670	20	3,640	2,130	1,610	360	5,444	15,860	612	1,670

[1] Preliminary. [2] Forecast. [3] End of season. *Source: Foreign Agricultural Service, U.S.D.A.* T168b

Supply & Distribution of Soybean Oil in the U.S. In Millions of Pounds

Year Begin. Oct. 1	Production	Imports	Stocks Oct. 1	Exports & Shipments	Domestic Disappearance										
						Food					Non-Food				
					Total Domestic	Shortening	Margarine	Cooking & Salad Oils	Other Edible	Total Food	Paint & Varnish	Resins & Plastics	Fatty Acids	Total Non-Food	Total Disappearance
1985–6	11,617	9	632	1,257	10,053	3,440	1,735	4,686	138	10,004	60	99	32	280	11,310
1986–7	12,783	15	947	1,187	10,833	3,359	1,661	5,054	138	10,213	63	109	33	300	12,020
1987–8	12,974	194	1,725	1,873	10,930	3,627	1,629	5,043	130	10,429	54	106		285	12,803
1988–9	11,737	137	2,092	1,661	10,591	3,419	1,537	4,497	137	9,636	35	124		282	12,252
1989–90[1]	13,004	22	1,715	1,525	12,083	3,956	1,738	4,703	121	10,519					13,353
1990–1[2]	13,165	20	1,305	1,150	12,000										13,150

[1] Preliminary. [2] Forecast. *Source: Economic Research Service, U.S.D.A.* T.623

SOYBEAN OIL

Salient Statistics of Soybean Oil in the U.S. In Millions of Pounds

Crop Year Begin. Oct.	Production		Consumption		Stocks Sept. 30		Imports for Consumption	Exports		$ Tonne	
	Crude	Refined	In Refining	In End Pdt's.	Crude	Refined		Crude	Refined	Rotter. Dutch F.O.B.	Brazil FOB Bulk
1982–3	12,040	9,714	10,075	9,485	959.4	301.6	66.8	1,725	17.0	463	444
1983–4	10,872	9,475	9,827	9,477	435.5	285.0	0	1,398	22.9	722	685
1984–5	11,470	9,937	10,284	10,515	341.3	291.2	20.4	1,255	16.4	625	609
1985–6	11,617	9,719	10,088	10,283	652.6	294.0	7.7	833.3	32.8	377	342
1986–7	12,798	10,400	10,751	10,512	1,451	274.0	1.1	903.0	38.8	324	302
1987–8	12,975	10,771	11,120	10,715	1,834	258.3		1,626	9.4	443	400
1988–9	11,737	9,805	10,115	9,918	1,455	260.0				435	407
1989–90[1]	13,004				—— 1,305 ——					438	421

[1] Preliminary. *Source: Bureau of Census* T.614

U.S. Exports of Soybean Oil,[1] by Country of Destination In Thousands of Metric Tons

Yr. Beg. Oct. 1	Australia	Colombia	Canada	Venezuela	Ecuador	Ethiopia	Haiti	Peru	India	Israel	Mexico	Morocco	Pakistan	Panama	Egypt	Grand Total
1980–1	16.5	60.3	7.8		38.6		22.4	41.2	61.8	5.2	21.6	5.0	125.7	14.7	3.4	740
1981–2	22.6	77.4	5.4	42.7	36.2		8.8	46.8	68.4	.3	91.1	9.7	259.9	21.7	6.9	942
1982–3	5.0	69.5	7.5	55.9	50.4		20.4	70.2	54.9	.4	16.3	9.0	236.7	16.4	3.5	918
1983–4	.3	24.8	9.8	50.5	41.1		12.5	24.9	169.4	.5	68.1	2.5	216.1	15.7	3.6	827
1984–5	.2	22.2	12.9	51.9	44.7	24.0	16.1	11.4	62.8	.9	45.4	3.8	168.4	8.0	3.9	753
1985–6	.2	8.9	6.1	17.1	16.7	17.3	9.5	1.6	37.6	.6	49.1	3.2	274.9	2.8	4.9	570
1986–7	.4	.5	6.9	18.7	18.8	.6	15.3	1.3	47.1	.6	21.9	59.5	146.7	3.0	1.9	538.5
1987–8	—	.3	7.3	4.9	19.1	17.6	3.4	1.1	151.6	.4	11.5	35.8	396.7	3.7	.7	850.0
1988–9	.1	.2	5.4	29.1	30.9	9.0	2.8	2.8	28.1		17.7	80.0	453.1	6.7		753.6
1989–90[2]	—	.1	5.4	8.2	26.3	22.9	1.7	5.2	16.4		4.4	78.0	309.5	3.2		613.9

[1] Crude & refined oil combined as such. [2] Preliminary. *Source: The Bureau of the Census, U.S. Dept. of Commerce.* T.615

U.S. Production of Crude Soybean Oil In Millions of Pounds

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1980–1	1,080	1,078	1,024	1,011	887.8	991.3	954.2	914.9	830.7	815.8	827.2	855.6	11,270
1981–2	1,125	1,018	1,070	995.6	917.7	912.1	866.8	930.2	828.4	765.6	732.0	818.3	10,979
1982–3	1,079	1,145	1,191	1,167	997.0	1,015	881.3	908.9	891.3	888.0	930.2	945.3	12,040
1983–4	1,081	957.7	990.9	1,053	896.9	972.7	846.7	906.3	803.5	788.8	819.4	755.9	10,872
1984–5	995.5	1,072	1,096	1,027	879.0	946.0	917.6	983.3	918.9	912.6	868.8	853.4	11,468
1985–6	1,040	1,053	1,096	1,086	894.8	1,005	935.4	953.3	881.9	909.5	875.3	886.7	11,617
1986–7	1,163	1,172	1,152	1,186	1,110	1,149	1,047	1,038	980.9	1,014	891.3	881.4	12,783
1987–8	1,120	1,207	1,208	1,170	1,092	1,187	1,133	1,087	996.4	994.2	878.6	901.3	12,974
1988–9	1,047	1,109	1,110	1,106	952.3	1,041	1,010	977.4	856.1	835.9	855.0	843.0	11,737
1989–90[1]	1,057	1,146	1,161	1,187	1,022	1,142	1,067	1,050	1,036	1,038	1,059	1,038	13,004
1990–1[1]	1,188	1,168											

[1] Preliminary. *Source: Bureau of the Census* T.618

U.S. Production of Refined Soybean Oil In Millions of Pounds

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1980–1	784.1	760.5	763.1	741.6	706.3	833.9	741.2	754.9	812.9	765.4	813.3	812.1	9,289
1981–2	833.6	840.9	805.2	768.7	767.6	866.4	754.5	817.3	866.3	775.4	811.7	794.0	9,702
1982–3	824.6	827.8	795.1	784.1	727.1	841.8	800.9	843.1	824.0	778.7	837.7	828.8	9,714
1983–4	839.2	747.2	737.1	797.9	813.2	841.8	763.8	859.5	794.6	767.9	752.2	760.9	9,475
1984–5	907.6	835.5	821.2	838.7	796.1	835.5	865.0	899.5	773.1	763.9	806.2	794.4	9,937
1985–6	865.7	834.8	790.0	804.2	751.1	819.5	783.0	808.5	816.8	780.2	830.1	834.8	9,719
1986–7	911.3	848.1	850.0	790.2	763.6	900.7	871.2	826.9	871.3	921.8	898.6	946.5	10,400
1987–8	975.5	925.8	902.5	880.3	843.4	925.6	843.5	894.1	890.1	947.4	903.6	838.7	10,771
1988–9	867.1	826.9	800.8	776.7	709.6	830.1	800.6	867.4	801.4	791.4	866.6	866.6	9,805
1989–90[1]	936.8	912.0	873.9	887.8	800.6	800.6	812.7	952.8	915.1	903.7	931.1	935.7	10,745
1990–1[1]	1,028	980.6	934.7										

[1] Preliminary. *Source: Bureau of the Census* T.617

Soybean Oil Consumption in End Products in the U.S. In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	750.7	719.4	762.9	671.6	693.6	683.7	671.2	754.5	737.1	719.1	682.6	738.7	8,585
1981	698.7	680.7	775.1	722.3	728.7	774.0	741.1	755.1	796.4	796.8	783.6	749.3	9,002
1982	740.0	737.7	809.6	715.2	761.0	834.6	775.2	811.9	820.5	799.9	763.1	733.2	9,302
1983	761.6	702.2	827.3	765.9	814.9	830.3	745.1	847.0	894.3	812.7	711.4	705.2	9,418
1984	827.6	821.7	837.8	781.1	857.4	824.4	744.7	772.2	780.6	932.0	883.4	856.1	9,919
1985	989.0	804.0	867.1	885.9	940.8	810.5	825.9	856.1	863.7	922.4	864.2	851.8	10,481
1986	836.7	794.0	889.7	849.1	850.3	856.8	835.1	843.1	890.3	927.6	840.6	891.2	10,305
1987	800.9	799.4	862.0	869.6	824.4	918.9	932.7	902.9	949.6	961.4	876.0	891.5	10,589
1988	913.9	820.5	930.0	839.9	870.5	937.9	936.5	907.3	829.1	862.2	829.1	846.6	10,524
1989[1]	780.8	729.5	834.7	800.8	851.9	854.2	774.7	876.9	876.2	923.0	889.5	886.9	10,079
1990[1]	901.4	815.7	936.6	893.7	950.9	927.8	865.9	904.6	895.6	984.1	912.9	878.0	10,867

[1] Preliminary. *Source: Bureau of the Census* T.624

U.S. Exports of Soybean Oil (Crude & Refined) In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1980	173.4	250.0	325.4	269.6	327.3	194.6	109.7	175.7	171.2	112.5	84.7	120.5	2,315
1981	116.0	113.8	202.8	76.1	109.6	108.8	93.1	291.7	97.9	187.2	146.6	184.3	1,698
1982	43.9	176.7	126.5	148.5	103.3	208.0	270.2	237.4	244.1	181.1	174.9	142.0	2,057
1983	124.0	225.9	90.4	305.7	127.5	94.1	208.9	125.1	225.1	55.1	54.7	95.5	1,732
1984	161.3	289.9	258.9	163.3	208.3	157.3	140.0	73.0	156.3	200.3	214.6	189.6	2,068
1985	66.7	198.3	184.9	66.9	52.4	138.8	174.4	70.1	102.8	125.4	38.1	74.3	923.3
1986	80.6	100.7	92.8	124.0	50.7	115.1	44.6	187.7	223.4	118.2	27.4	22.8	1,188
1987	67.9	74.0	52.1	28.2	47.4	85.0	175.6	261.0	224.8	100.1	139.0	134.0	1,389
1988	25.7	281.0	279.4	87.7	138.6	269.0	157.2	78.1	183.2	200.1	110.6	119.9	1,931
1989	104.5	65.8	112.4	105.5	161.4	72.1	159.3	181.1	265.6	123.9	82.5	113.4	1,548
1990[1]	95.4	136.2	164.4	33.0	112.1	161.9	122.6	82.5	298.7	85.4	43.9		

[1] Preliminary. *Source: Dept. of Commerce* T.619

U.S. Stocks of Soybean Oil (Crude & Refined) at Factory & Warehouses In Millions of Pounds

Year	Oct. 1	Nov. 1	Dec. 1	Jan. 1	Feb. 1	Mar. 1	April 1	May 1	June 1	July 1	Aug. 1	Sept. 1
1980–1	1,210	1,428	1,677	1,738	1,900	1,976	2,017	2,119	2,166	2,139	2,024	1,783
1981–2	1,736	1,790	1,884	2,024	2,160	2,141	2,141	2,112	2,018	1,889	1,647	1,398
1982–3	1,103	1,208	1,305	1,587	1,713	1,700	1,842	1,600	1,552	1,546	1,411	1,408
1983–4	1,261	1,453	1,661	1,919	1,907	1,583	1,520	1,380	1,203	1,012	989.6	871.0
1984–5	720.5	597.2	580.1	777.1	883.6	723.9	715.6	666.0	706.7	731.9	724.2	715.7
1985–6	632.4	636.1	810.4	969.4	1,167	1,181	1,247	1,219	1,360	1,225	1,321	1,152
1986–7	946.6	963.6	1,269	1,507	1,837	2,017	2,352	2,344	2,416	2,339	2,184	1,979
1987–8	1,725	1,661	1,834	2,050	2,391	2,239	2,343	2,385	2,570	2,361	2,203	2,212
1988–9	2,092	2,046	2,303	2,540	2,703	2,902	2,893	2,759	2,743	2,683	2,427	2,070
1989–90[1]	1,715	1,515	1,532	1,605	1,718	1,703	1,695	1,716	1,551	1,422	1,433	1,380
1990–1[1]	1,325	1,216	1,320	1,464								

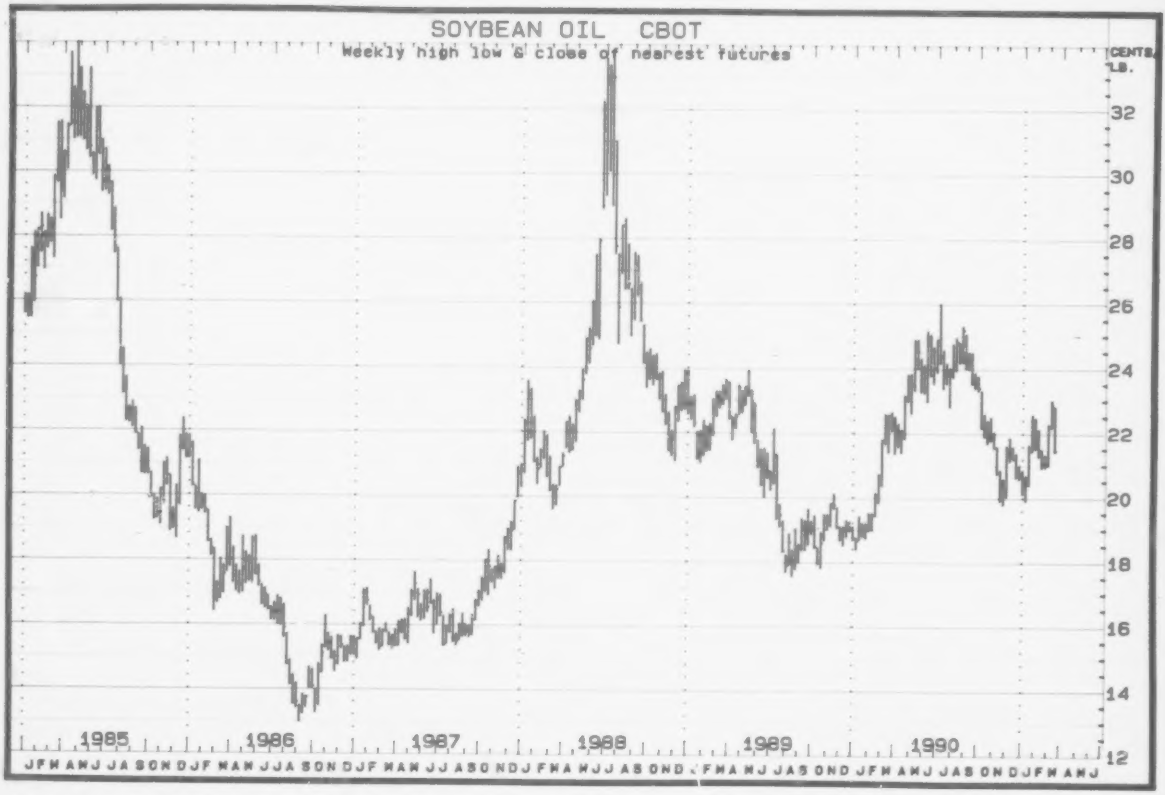
[1] Preliminary. *Source: Bureau of the Census* T.616

Average Prices of Crude Domestic Soybean Oil (in Tank Cars) F.O.B. Decatur In Cents per Pound

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Average
1980–1	25.1	26.7	23.7	23.0	22.0	23.1	23.4	21.6	21.3	22.8	20.8	19.4	22.7
1981–2	19.7	19.9	18.9	18.4	18.2	18.5	19.7	20.6	19.4	19.0	17.9	17.4	19.0
1982–3	17.4	17.6	16.6	16.4	17.3	17.7	19.3	19.8	19.4	21.6	30.2	34.3	20.6
1983–4	30.7	28.1	27.3	28.3	27.2	30.1	32.1	39.0	36.0	31.0	29.0	28.0	30.6
1984–5	30.6	31.9	28.4	28.0	29.6	31.3	33.6	32.5	32.5	29.1	24.1	22.6	29.5
1985–6	20.7	20.6	21.4	20.6	18.6	17.6	17.7	17.8	16.8	16.2	14.3	13.9	18.0
1986–7	14.63	14.88	14.94	15.60	15.40	15.21	15.31	16.22	15.96	15.41	15.16	15.58	15.36
1987–8	17.03	17.55	19.00	21.98	20.94	20.22	21.67	23.56	27.68	29.65	27.16	25.55	22.67
1988–9	23.42	21.55	22.16	21.13	21.21	22.11	21.97	22.23	20.75	19.66	18.08	18.77	21.09
1989–90	19.02	19.57	19.11	19.28	20.27	22.80	23.35	24.72	25.03	24.69	25.05	24.45	22.30
1990–1[1]	22.59	21.05	21.3	21.4									

[1] Preliminary. *Source: Bureau of Labor Statistics* T.620

SOYBEAN OIL

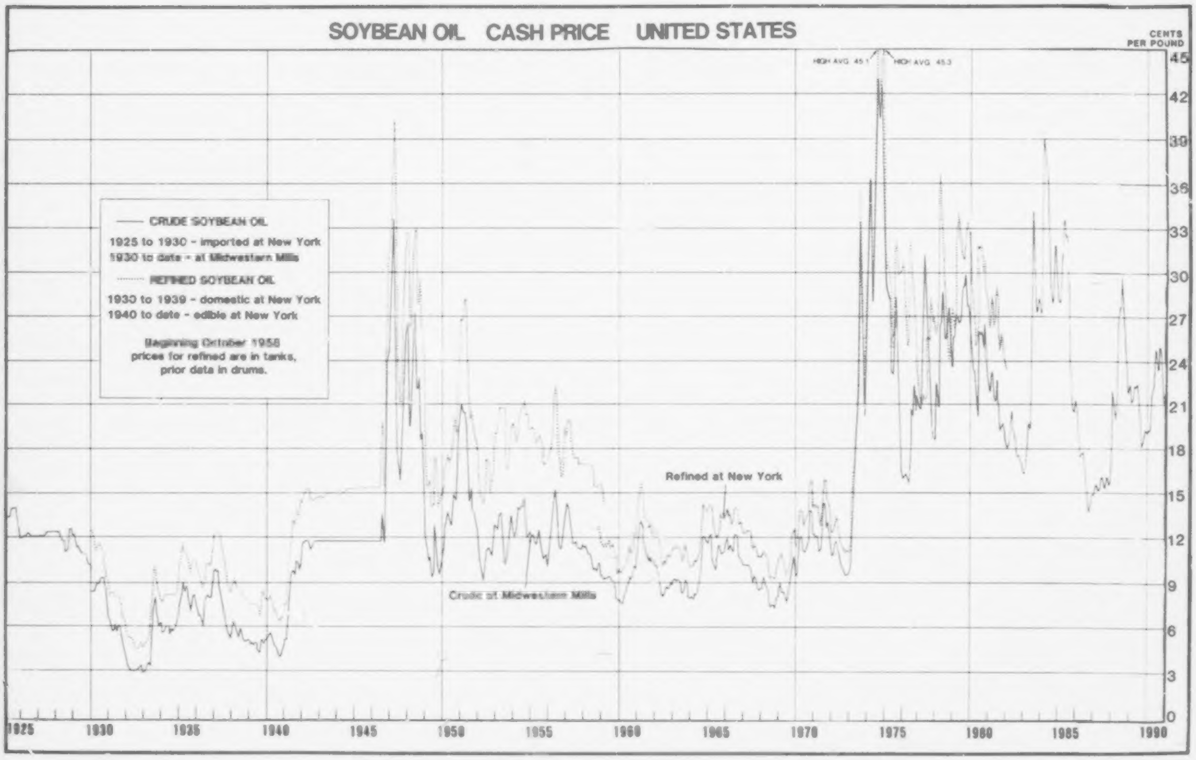


High, Low & Closing Prices of May Soybean Oil Futures on the Chicago Board of Trade ¢ per lb.

Year of Delivery		Year Prior to Delivery										Delivery Year					Life of Delivery Range
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1984	High	—	21.60	21.60	20.75	25.25	34.00	35.85	22.60	30.70	30.10	30.60	28.82	31.55	33.70	41.15	41.15
	Low	—	20.75	19.27	19.75	20.50	25.05	29.90	28.35	26.20	26.50	27.00	25.05	27.72	29.70	31.[illegible]	19.27
	Close	—	21.53	20.20	20.75	24.30	32.75	31.00	28.88	27.74	30.08	27.68	28.25	29.82	32.47	39.8[illegible]	—
1985	High	—	—	29.95	30.10	27.15	27.45	26.50	25.75	26.10	25.60	27.20	27.70	30.60	34.00	33.27	34.00
	Low	—	—	28.10	26.92	23.15	24.35	22.80	23.85	23.78	23.95	24.40	26.30	26.15	30.05	30.65	22.80
	Close	—	—	28.88	27.92	24.35	26.70	23.80	25.07	24.55	24.61	26.67	27.26	30.52	32.53	32.93	—
1986	High	24.40	27.85	27.45	25.80	25.40	24.20	22.65	22.15	21.60	23.04	22.50	20.30	19.27	19.25	18.50	27.85
	Low	24.40	24.40	24.40	24.20	23.90	22.30	21.45	20.02	19.25	19.30	19.91	16.76	16.96	16.90	17.22	16.76
	Close	24.40	27.20	24.53	24.86	24.25	22.60	22.20	20.92	19.60	22.01	20.14	17.06	19.24	18.65	17.50	—
1987	High	20.60	20.90	19.75	18.71	18.40	17.35	15.80	16.75	16.35	16.30	17.38	17.20	16.30	16.14	17.60	20.90
	Low	18.38	18.48	18.50	17.65	17.20	14.75	14.40	14.60	15.27	15.50	15.45	15.84	15.21	15.30	15.95	14.40
	Close	20.60	19.95	18.68	17.65	17.20	14.90	15.43	15.95	16.19	15.76	17.00	15.91	15.59	15.92	16.56	—
1988	High	—	—	19.25	19.00	18.40	17.50	18.04	19.30	19.55	21.55	23.70	22.33	21.50	22.95	24.80	24.80
	Low	—	—	17.77	17.50	16.85	16.50	16.80	17.81	17.86	19.00	21.32	20.66	19.86	21.32	22.58	16.50
	Close	—	—	17.82	18.15	17.38	16.95	17.75	18.08	19.30	21.41	21.33	21.57	21.21	22.86	24.64	—
1989	High	—	24.25	27.15	33.00	32.90	29.43	29.10	26.15	25.07	24.95	24.05	23.80	23.87	23.45	23.90	33.00
	Low	—	22.42	24.20	25.80	25.90	26.70	25.20	24.22	22.45	22.90	21.56	21.93	22.40	21.75	22.01	21.56
	Close	—	24.25	27.10	31.50	26.90	28.65	25.77	24.72	23.17	23.95	22.44	23.67	22.48	22.83	22.52	—
1990	High	—	25.90	26.15	23.25	23.50	20.55	21.10	20.80	21.09	20.28	20.08	21.50	22.76	23.80	24.88	26.15
	Low	—	24.30	22.77	21.57	19.65	19.30	19.91	19.20	19.63	19.48	19.22	19.32	21.23	21.37	22.60	19.20
	Close	—	25.17	22.77	21.75	19.65	20.05	20.32	20.11	19.93	19.60	19.55	21.47	22.08	23.45	23.72	—
1991	High	21.20	23.00	23.70	24.00	24.91	25.65	25.05	24.25	22.95	22.54	22.90	22.43				
	Low	20.45	20.82	21.70	21.70	23.25	24.00	24.25	22.85	20.87	21.38	20.52	21.29				
	Close	20.75	22.75	21.90	23.91	24.55	24.55	24.39	22.94	22.30	21.43	22.00	21.98				

Source: Chicago Board of Trade

T.622



Average Open Interest of Soybean Oil Futures of the Chicago Board of Trade In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1982	50,210	53,926	50,108	51,762	54,574	55,441	55,869	53,243	46,052	43,332	41,425	23,823
1983	48,790	50,751	51,597	60,866	57,007	56,958	54,403	60,570	73,114	79,123	78,857	68,567
1984	61,271	59,187	53,640	57,139	65,025	61,391	54,517	47,204	45,349	40,365	43,138	42,943
1985	37,482	42,453	47,038	56,246	58,675	60,357	55,448	53,111	53,351	47,026	42,732	46,469
1986	48,384	52,875	55,877	56,114	53,063	60,035	63,034	60,095	54,905	57,256	69,227	67,871
1987	71,509	81,610	73,916	75,154	82,843	86,672	83,041	68,373	65,973	68,860	73,194	79,985
1988	85,953	88,260	86,472	85,712	87,253	94,791	95,931	87,566	86,994	82,541	82,477	75,688
1989	77,741	81,676	78,235	77,249	73,623	76,572	70,644	68,652	63,751	63,911	69,248	68,166
1990	73,368	80,842	87,615	92,845	103,116	103,747	88,763	81,310	73,841	78,548	86,786	75,995
1991	72,987	71,558										

Source: Chicago Board of Trade

T.625

Volume of Trading of Soybean Oil Futures at the Chicago Board of Trade In Thousands of Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	219.1	245.6	239.8	272.2	277.7	270.7	264.5	294.9	260.5	195.4	307.4	221.6	3,049
1983	273.6	244.1	264.4	273.2	233.1	288.9	332.6	452.3	445.4	378.7	355.5	316.7	3,859
1984	358.3	346.5	337.7	360.0	513.7	436.7	353.6	280.8	244.2	269.5	288.0	220.5	4,010
1985	264.2	256.0	311.6	405.0	416.4	308.7	341.1	281.5	233.0	270.0	281.5	278.4	3,647
1986	263.1	235.9	254.0	311.7	273.8	262.0	296.0	237.9	202.7	324.8	261.4	259.6	3,183
1987	347.3	304.8	267.7	303.4	374.2	363.9	356.3	267.6	301.1	349.8	315.1	361.2	3,912
1988	437.0	390.7	346.8	442.7	399.2	580.2	461.4	403.6	390.0	303.1	377.3	364.2	4,896
1989	317.8	347.7	368.1	384.7	426.4	386.3	414.5	348.8	320.8	341.0	344.2	298.6	4,301
1990	294.1	397.1	413.9	447.7	488.8	441.5	462.3	405.6	319.2	344.1	370.2	266.3	4,651
1991	330.2	259.4											

Source: Chicago Board of Trade

T.626

Soybeans

Soybeans are the most widely produced and traded oilseed, accounting for nearly half of all oilseeds grown worldwide. World soybean production in 1990/91 was forecast at 104.5 million tonnes, down slightly from a year earlier.

The U.S. remained the largest producer, with a crop of 52.3 million tonnes. In Brazil, a lack of farm credit contributed to a drop in production. In areas of Brazil that lie further away from export facilities, soybean acreage fell, as crops like corn were more profitable. Use of fertilizers and pesticides declined, and weather was dry late in the growing season, hurting yields. The Brazilian crop was put at 17 million tonnes, below the previous year's 19.3 million. In Argentina, a weak economic outlook at a time of lower prices did not encourage producers. Argentina's soybean crop was forecast to be 10.3 million tonnes, down from 10.7 million the previous season. The other major producer was China, with a crop of 11.5 million tonnes, up from 10.3 million.

World exports of soybeans were projected to fall to 25.4 million tonnes from 27.1 million the previous season. The U.S. was the dominant exporter with a market share of 59 percent. Brazil and Argentina continued to be major soybean exporters, and both countries had large oilseed processing capacities, giving producers the option to sell to an exporter or to a processor. The two countries have policies that tax soybean exports more than the value-added oil and meal exports. This results in more processing of soybeans, with the emphasis on sales and exports of meal and oil.

On average, Brazil exports nearly 20 percent of its crop as soybeans, and the rest is processed. Brazilian soybean exports in 1990/91 were placed at 3.5 million tonnes. Argentina has a large processing capacity for soybeans, sunseed, and flaxseed. The country exports about 30 percent of its crop as soybeans, with shipments in 1990/91 expected to be 3.4 million tonnes. Major importers of soybeans were the EC and Japan.

The world soybean crush in 1990/91 was put at 87.5 million tonnes, near 87.3 million a year earlier. The U.S. was the largest processor, accounting for over 35 percent of the world crush. Together Brazil and Argentina had a 25 percent share of the crush and the EC about 14 percent. Global ending stocks of soybeans were pegged at 20.6 million tonnes, versus 20.2 million in 1989/90.

The 1990 U.S. soybean crop was estimated at 1.922 billion bushels, about the same as the previous season. Acreage planted fell by 5 percent to 57.7 million, while harvested acreage was 56.5 million. Growing conditions were quite good, with little stress placed on the crop. Yields were better than had been expected, and USDA made a substantial increase in the crop estimate late in the season. The national average yield was 34 bushels per acre, up from 32.3 bushels in 1989. Illinois was the largest producer, with 346 million bushels, while Iowa's crop increased slightly to 324 million.

Domestic soybean stocks at the start of 1990/91 were 239 million bushels. Total supplies of soybeans were 2.16 billion bushels, or 3 percent more than in 1989/90.

Crushing margins remained profitable, with expectations that the USSR would be a steady buyer of meal. The crush was forecast at 1.17 billion bushels, 2 percent more than the previous season.

U.S. soybean exports were projected to total 550 million bushels, down 12 percent, pressured by the availability of soybeans from the previous South American harvest and by weak demand. The major U.S. markets were the EC and Japan.

Domestic ending stocks of soybeans were due to rise to 350 million bushels from 239 million in 1989/90.

U.S. Government Program

The 1990 Farm Bill made some changes in the 1991-95 soybean program. The loan rate was set at $5.02 per bushel, subject to a 2 percent loan origination fee. A marketing loan goes into effect with the 1991 crop, allowing producers to repay crop loans at the lower of the loan rate or a calculated world price. Producers of program crops like corn will have much more flexibility in their planting decisions, and this may lead to higher soybean plantings.

Futures Markets

Soybean futures and options are traded on the Chicago Board of Trade. Futures are also traded on the Mid America Commodity Exchange.

World Production of Soybeans In Thousands of Metric Tons

Crop[3] Year	Argentina	Brazil	Canada	China	Colombia	India	Indonesia	Japan	Rep. of Korea	Mexico	Rumania	Paraguay	Thailand	United States	USSR	World Total
1986–7	7,000	17,300	960	11,610	128	891	900	245	199	660	472	950	356	52,801	703	98,100
1987–8	9,700	18,021	1,267	12,470	115	980	950	287	203	750	350	1,100	338	52,329	712	103,660
1988–9	6,500	23,200	1,100	11,650	200	1,400	1,100	277	259	300	340	1,620	450	42,117	880	95,550
1989–90[1]	10,750	20,000	1,219	10,230		270						1,500		52,354	920	106,790
1990–1[2]	10,300	17,500	1,200	11,500		285						1,600		51,814	950	105,070

[1] Preliminary. [2] Projected. [3] Split year includes Northern Hemisphere crops harvested in the late months of the first year shown combined with Southern Hemisphere crops harvested in the early months of the following year. *Source: Foreign Agricultural Service, U.S.D.A.* T.627

Supply and Distribution of Soybeans in the United States In Millions of Bushels

Crop Year Begin. Sept. 1	Supply: Stocks, Sept. 1: Farms	Supply: Stocks, Sept. 1: Mills, Elevators[2]	Supply: Stocks, Sept. 1: Total	Supply: Production	Supply: Total Supply	Distribution: Crushings	Distribution: Exports	Distribution: Seed	Distribution: Feed	Distribution: Residual	Total Distribution
1981–2	153.6	159.4	313.0	1,989.1	2,302	1,030	929.0		89		2,048
1982–3	117.7	136.7	254.5	2,190.3	2,444	1,108	905		86		2,099
1983–4	118.6	226.1	344.6	1,635.8	1,981	983	743		79		1,805
1984–5	67.9	107.8	175.7	1,860.9	2,037	1,030	598		93		1,721
1985–6	143.2	172.8	316.1	2,099.1	2,415	1,053	740		86		1,879
1986–7	167.1	369.3	536.4	1,942.6	2,479	1,179	757		106		2,042
1987–8	108.0	328.5	436.4	1,938.1	2,375	1,174	802		97		2,073
1988–9	105.1	197.4	302.5	1,548.8	1,855	1,058	527		88		1,673
1989–90[1]	87.3	94.7	182.0	1,923.7	2,109	1,145	623		101		1,870
1990—1[3]	86.0	153.1	239.1	1,903.8	2,161	3,185	580		98		1,863

[1] Preliminary. [2] Also warehouses. [3] Estimates. *Source: Economic Research Service, U.S.D.A.* T.632

U.S. Soybean Price Support Program & Official Crop Production Reports In Millions of Bushels

Crop Year Begin. Sept.	Quantity Put Under Support	% of Production	Sept. 1 Stocks: Total	Sept. 1 Stocks: Gov't. Owned	National Avg. Support: % of Parity	National Avg. Support: $ Per Bu	Crop Production Reports (In Thousands of Bushels): August 1	September 1	October 1	November 1	December 1	Final
1981	221.5	11.1	313.0	.5	40	5.02	2,017,468	2,089,418	2,106,568	2,076,998	2,030,452	1,989,110
1982	396.6	18.1	254.5	20.9	39	5.02	2,293,420	2,313,880	2,300,345	2,299,520	2,276,976	2,190,297
1983	101.2	6.2	344.6	.7	39	5.02	1,843,459	1,534,969	1,517,019	1,536,519	1,595,437	1,635,772
1984	278.3	15.0	175.7	4.4	39	5.02	2,035,370	2,027,565	1,971,700	1,901,565	1,860,783	1,860,863
1985	517.8	24.7	316.1	131.3	40	5.02	1,959,439	2,062,889	2,108,379	2,129,034	2,098,531	2,099,056
1986	327.6	16.9	536.4	249.2	39	4.77	1,979,773	1,979,773	1,991,763	2,009,333	2,007,033	1,942,558
1987	274.7	14.3	436.4	6.9	39	4.77	2,000,349	1,956,859	1,968,069	1,959,949	1,904,712	1,938,087
1988[1]	120.1	7.8	302.5		40	4.77	1,473,986	1,472,376	1,501,381	1,511,876	—	1,548,841
1989[1]			182.0			4.53	1,905,300	1,889,265	1,926,385	1,936,545	—	1,923,666
1990[1]			239.1			4.50	1,836,017	1,834,602	1,823,462	1,903,832		

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.628

Soybean Stocks in the United States In Millions of Bushels

Year	On Farms: Mar. 1	On Farms: June 1	On Farms: Sept. 1	On Farms: Dec. 1	Off Farms: Mar. 1	Off Farms: June 1	Off Farms: Sept. 1	Off Farms: Dec. 1	Total Stocks: Mar. 1	Total Stocks: June 1	Total Stocks: Sept. 1	Total Stocks: Dec. 1
1985	N.A.	32[illegible]6	143.2	1,030.9	N.A.	281.8	172.8	929.0	N.A.	608.4	316.1	1,959.8
1986	699.3	[illegible]	167.1	1,061.0	671.9	437.2	369.3	895.6	1,371.3	848.9	536.4	1,956.6
1987	589.0	282.[illegible]	108.0	868.3	750.0	554.7	328.5	890.0	1,339.0	836.8	436.4	1,758.3
1988	553.1	304.9	105.1	650.0	594.6	351.4	197.4	716.8	1,147.7	656.3	302.5	1,366.8
1989[1]	415.0	229.2	87.3	793.4	475.2	235.3	94.7	817.3	890.2	464.5	182.0	1,610.7
1990[1]	535.8	255.3	86.0	754.0	519.7	340.6	153.1	930.0	1,055.5	595.9	239.1	1,684.0

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A* T.629

U.S. Commercial Stocks of Soybeans on the First of the Month In Millions of Bushels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981	73.1	71.1	69.0	53.1	45.3	35.7	24.7	19.0	11.2	12.6	40.7	51.7
1982	50.6	50.4	41.1	39.9	34.7	67.4	21.5	18.4	11.5	12.8	43.9	53.5
1983	53.6	58.2	57.5	55.7	55.9	44.7	34.9	35.8	42.5	47.0	78.8	83.0
1984	77.2	74.4	65.2	58.6	49.2	41.1	35.4	20.8	7.9	6.7	23.3	41.7
1985	41.1	44.0	38.2	33.3	22.8	14.7	12.7	11.3	6.9	9.6	47.6	60.9
1986	61.7	63.9	57.3	53.6	40.2	30.5	24.9	24.5	24.8	30.1	52.5	61.5
1987	62.0	61.4	56.9	52.5	49.4	46.3	38.4	26.0	16.6	21.3	56.5	57.1
1988	63.0	66.9	63.6	61.2	54.6	51.7	53.2	54.5	46.0	41.6	74.7	80.9
1989	81.3	75.6	63.8	53.4	35.8	31.2	21.1	18.6	14.1	11.4	62.1	71.3
1990	65.8	62.1	57.8	53.2	56.2	54.4	48.1	41.4		24.1	89.7	
1991	86.6	78.1										

Source: Foreign Agricultural Service, U.S.D.A. T.630

SOYBEANS

Salient Statistics of Soybeans in the United States

Crop Year	Planted	Acreage Harvested	Yield Per Acre (Bus.)	Farm Price ($ Bu.)	Farm Value (Million Dollars)	— Pounds Per — Bushel Crushed		—— U.S. Exports of Soybeans Crop Year (Sept.-Aug.) (Ths. Metric Tons) ——								
	— 1,000 Acres —					Yield of Oil	Yield of Meal	Grand Total	Bel.-Luxem.	Spain	Canada	W. Germany	Japan	Netherlands	Taiwan	U.S.S.R.
1976–7	50,269	49,401	26.1	6.81	8,769	11.09	47.81	15,351	411	1,030	462	1,520	3,219	3,007	697	825
1977–8	58,978	57,830	30.6	5.88	10,363	10.39	47.34	19,061	475	1,532	264	1,521	3,636	4,086	854	744
1978–9	64,708	63,663	29.4	6.66	12,450	11.07	47.63	20,117	420	1,475	352	1,486	3,865	4,012	1,271	1,178
1979–0	71,411	70,343	32.1	6.28	14,204	10.74	48.01	23,818	584	2,203	392	1,318	3,868	6,035	780	813
1980–1	60,930	67,813	26.5	7.57	13,601	11.09	47.93	19,712	670	1,383	345	1,791	3,816	3,839	1,063	
1981–2	67,543	66,163	30.1	6.04	12,005	10.72	47.86	25,285	1,404	3,855	310	2,135	4,196	5,349	1,059	683
1982–3	70,884	69,442	31.5	5.65	12,463	10.76	47.88	24,634	1,259	2,313	324	1,813	4,580	4,648	1,300	199
1983–4	63,779	62,525	26.2	7.83	12,775	11.26	47.36	20,215	882	1,800	248	967	4,394	2,988	1,382	408
1984–5	67,755	66,113	28.1	5.84	10,748	11.05	47.15	16,279	658	1,084	140	718	3,828	2,857	1,389	0
1985–6	63,145	61,599	34.1	5.05	10,571	11.01	47.27	20,158	784	1,519	114	934	4,293	3,056	1,506	1,519
1986–7	60,405	58,312	33.3	4.78	9,263	10.86	47.08	20,600	888	1,775	206	1,393	4,024	3,540	1,968	71
1987–8	58,180	57,172	33.7	5.88	11,391	11.04	47.76	21,870	825	1,593	[illegible]	1,416	3,914	4,267	1,857	831
1988–9	58,840	57,373	26.9	7.42	11,488	11.16	47.43	14,356	474	1,152	[illegible]	601	3,251	2,531	1,439	240
1989–0[1]	60,820	59,538	32.3	5.70	10,732	11.17	47.55	16,952	666	1,565	290	818	3,480	2,729	2,016	342
1990–1[2]	57,725	56,493	33.7	6.00	11,346											

[1] Preliminary. [2] Forecast. *Source: Crop Reporting Board, U.S.D.A.* T.631

Production of Soybeans for Beans in the U.S., by Selected States In Millions of Bushels

Year	Ark.	So. Car.	Ill.	Ind.	Iowa	La.	Mich.	Minn.	Miss.	Mo.	N. Car.	Ohio	Tenn.	Nebr.	Ky.
1975	117.5	30.4	299.5	121.6	237.0	48.0	15.9	98.6	70.2	113.6	33.4	102.3	46.3	32.4	29.7
1976	82.1	21.4	249.5	111.5	200.0	63.0	11.6	66.4	71.5	84.0	24.6	95.0	40.5	19.6	28.9
1977	105.8	26.7	336.3	144.3	251.3	63.0	21.6	133.8	78.5	148.8	29.0	120.0	52.2	40.7	40.9
1978	115.2	32.3	309.5	144.2	283.1	76.0	21.6	146.2	81.7	155.0	40.3	127.7	56.9	42.5	40.8
1979	144.2	39.8	379.1	159.1	306.4	93.8	30.3	162.6	118.9	183.6	45.8	144.8	70.7	54.7	54.0
1980	65.3	20.8	309.9	157.7	318.4	67.0	30.4	149.9	61.6	135.5	34.7	135.4	45.9	53.1	36.0
1981	99.0	31.0	351.5	151.8	326.0	64.2	29.1	139.2	75.6	155.6	46.3	99.8	61.1	78.7	47.9
1982	105.6	39.6	354.2	173.3	306.6	75.4	35.3	169.1	92.3	171.0	52.5	133.2	61.0	78.8	51.3
1983	70.3	23.6	267.0	122.5	278.6	68.1	33.8	151.8	58.9	103.0	33.0	105.0	31.5	59.0	24.5
1984	101.4	29.8	284.1	150.1	264.6	66.8	32.1	172.9	76.8	108.7	46.5	137.6	48.1	66.3	42.3
1985	98.1	24.6	382.5	185.1	309.7	44.1	34.6	160.0	70.7	180.4	39.1	160.6	45.3	85.0	41.8
1986	66.0	13.7	360.0	157.3	350.7	35.0	28.8	162.8	41.7	170.6	36.7	146.6	35.5	93.1	35.8
1987	71.5	15.7	330.6	174.0	343.7	38.8	38.2	181.4	47.8	154.6	32.8	147.3	28.8	83.4	24.0
1988	83.2	18.6	234.9	115.5	251.1	56.6	35.1	124.8	49.5	112.1	35.4	99.9	32.0	70.8	24.1
1989	75.2	20.2	354.0	166.1	322.9	38.5	38.9	185.0	40.0	121.8	41.9	125.4	29.8	81.9	36.9
1990[1]	79.3	14.2	354.9	174.3	323.9	40.8	42.2	175.5	40.0	123.0	31.1	143.5	32.5	79.9	37.5

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.633

Soybean Stocks at U.S. Mills on First of Month In Millions of Bushels

Crop Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1978–9	37.9	31.9	138.4	149.4	127.3	112.4	124.0	120.9	96.7	71.1	73.0	55.6
1979–0	37.5	39.2	166.5	184.5	163.3	145.4	130.7	118.6	95.8	79.7	75.7	73.9
1980–1	56.9	80.4	166.0	172.0	138.7	125.9	105.4	97.2	84.4	67.8	49.2	43.9
1981–2	33.4	31.5	105.8	135.2	114.5	99.8	84.6	79.2	72.2	60.8	51.2	43.6
1982–3	30.0	29.0	114.2	145.5	125.1	116.2	98.5	96.2	84.6	69.8	62.0	55.4
1983–4	58.6	63.9	124.5	142.3	124.0	125.3	114.8	105.3	94.2	101.7	83.4	57.7
1984–5	35.3	19.7	53.9	116.4	98.4	85.9	65.8	69.7	65.2	53.4	47.6	36.0
1985–6	26.7	25.7	92.8	113.4	119.9	124.6	97.5	84.9	67.6	53.2	40.7	40.2
1986–7	28.5	38.3	108.1	127.4	117.2	113.1	105.4	90.2	85.2	72.9	63.6	49.8
1987–8	31.2	65.7	158.5	155.5	145.0	141.8	139.3	133.8	113.9	95.4	90.1	66.2
1988–9	59.7	61.4	136.6	147.4	138.6	131.9	112.0	99.2	72.8	52.5	46.1	31.0
1989–90[1]	23.8	24.5	96.3	108.5	89.7	93.6	91.4	83.5	73.0	67.5	58.8	46.9
1990–1[1]	45.2	34.5	130.1									

[1] Preliminary. *Sources: Economic Research Service, U.S.D.A.* T.635

Soybean Exports from the United States In Millions of Bushels

Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Total
1980–1	41.4	60.3	75.0	74.5	71.7	55.5	103.2	60.0	69.6	41.8	29.6	41.8	724.3
1981–2	50.9	100.8	103.7	73.6	84.3	89.4	79.0	85.7	90.6	59.8	53.8	57.5	929.1
1982–3	58.0	94.4	93.6	90.1	86.3	87.2	84.4	73.3	58.5	67.7	51.6	60.2	905.2
1983–4	53.9	67.6	69.2	74.5	80.4	79.7	78.8	68.5	56.8	41.1	39.2	30.7	686.6
1984–5	19.0	40.9	93.5	84.8	70.3	72.6	59.8	60.4	33.1	18.2	19.2	26.3	598.2
1985–6	31.5	55.3	79.6	94.1	84.7	92.1	89.9	80.4	57.2	28.7	26.6	20.4	740.7
1986–7	30.2	89.7	96.6	89.0	71.7	73.8	67.8	53.9	37.6	37.9	54.3	54.5	756.9
1987–8	59.4	101.1	100.4	81.1	80.8	97.0	78.5	66.7	39.7	29.3	30.4	37.2	801.7
1988–9	26.7	50.2	61.3	69.3	66.3	56.1	66.8	40.8	23.2	31.2	16.4	18.3	526.5
1989–90[1]	17.9	74.0	76.6	65.7	76.3	74.9	87.3	43.6	22.8	35.2	20.8	28.3	626.4
1990–1[1]	27.9	29.7	62.8										

[1] Preliminary. *Source: Bureau of the Census*

T.636

High, Low & Closing Prices of May Soybean Futures at the Chicago Board of Trade In Cents per Bushel

Year of Delivery	Year Prior to Delivery										Delivery Year					Life of Delivery Range
	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
1983 High	713	729½	723½	704½	678½	664½	611½	588	607¾	595½	620	622	643¾	655½	643	746
Low	667½	698	687½	670	651	593½	572½	558½	570½	576¼	577	572½	577½	620¼	610¼	558½
Close	696	716½	687½	671	654¾	601	574¼	568¼	594	581¾	618½	575½	637	640¼	621½	—
1984 High	718	732	720	678	794	984	996	927	903½	853	825	768	815	813	894	996
Low	645	695½	659	630	657½	760	859½	831	791	775½	738	706	762	765	768½	630
Close	714	719	659½	660	761	930	890	851	822	843½	747½	765	789	771	888	—
1985 High	773	777	784	797	764	700	675	678	676½	640½	624	619½	614	609¾	590¾	797
Low	753	737	744½	736	940	643½	601	623	623	597¼	581¾	572	570¾	585	568	568
Close	768½	737	777	761	646½	675	627	659¾	634¼	599	613¼	573	605½	588	568	—
1986 High	645	650	637	616	618	560½	560½	551½	557	567	566½	545	548	563	549	650
Low	608½	631	583½	577	547	531¼	532	534¼	549	504	537	523¼	527¼	519½	527	504
Close	643½	636½	590½	583	555¼	541	547½	548¾	513	554	542½	529¾	541½	544	534½	—
1987 High	554	574	574	536	541½	529½	513¾	514	512	511¼	502¼	500¾	498	536	584	584
Low	535½	522	529½	509½	504½	492	491¾	493¼	501	489	489	478½	482½	496½	531¼	478½
Close	544¾	564½	529½	510	525	502	508½	509	510½	498¼	498¾	483	496½	534½	549½	—
1988 High	505½	554	634	650	577	539	554¼	576	626½	629½	651	656	656	690	784	784
Low	488	509	549½	566	532	509	520½	540½	538½	592¼	610	603½	608	656	682	476
Close	504	554	579	575	547½	521¾	550½	549½	618½	622	616½	642½	653½	689½	777	—
1989 High	693	735	828	1003	960	882	912	843	826	828	842	788	794½	761	771	1,003
Low	647	702½	727	814	747	806	816½	782	748	767½	752	732½	733	704½	723½	642
Close	693	735	828	935½	795	870	826¾	802¼	779½	827¼	784½	773½	738¼	722½	739	—
1990 High	778	769	750	700	730	628	626	624	621½	613	599¾	585½	606½	639	655	778
Low	732½	711	651	641	601½	589	597	573½	593¼	592¼	566¼	570¼	577½	581½	602	566¼
Close	734	730½	651	673	601¾	618¾	602½	595½	607¼	596	573½	580¾	595	632½	604½	—
1991 High	653	692	706	683¾	711	680½	676½	671½	643	633½	603¾	596½				
Low	625½	635	650	633½	622	617½	643½	634	592	585½	561	576½				
Close	645¾	689	652½	683¾	639	647	654¼	636¼	617¼	588¾	580½	588				

Source: Chicago Board of Trade

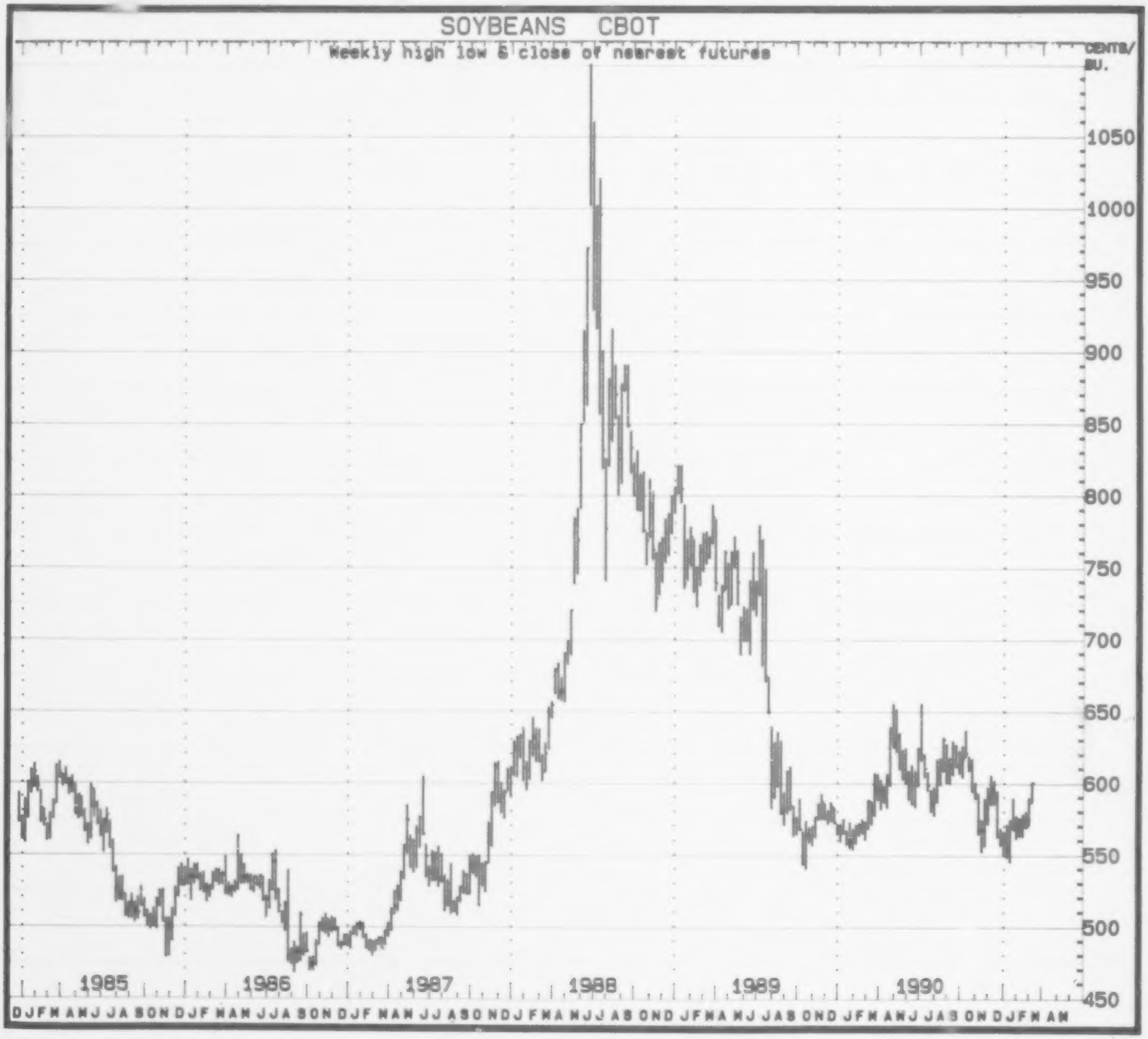
T.634

Volume of Trading in Soybean Futures at the Chicago Board of Trade In Millions of Bushels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	3,120	3,497	4,478	4,484	3,517	4,245	4,017	3,822	3,197	4,014	4,282	3,198	45,828
1983	3,942	3,820	4,247	4,375	4,259	4,409	6,224	8,799	7,852	8,071	6,793	5,609	68,402
1984	5,550	5,247	6,008	4,945	7,300	6,323	5,314	4,045	2,505	3,687	3,427	2,463	56,813
1985	3,315	2,749	2,657	2,821	2,766	3,309	3,779	2,581	2,525	3,364	3,881	3,213	36,961
1986	3,692	2,484	2,435	2,976	2,546	2,199	2,925	2,049	1,812	3,266	2,473	1,811	30,668
1987	2,174	1,816	1,794	3,118	3,969	4,356	3,785	1,935	2,305	4,109	3,674	3,859	36,894
1988	4,436	4,252	4,284	4,822	6,339	7,975	5,574	5,214	4,516	5,235	5,001	4,777	62,485
1989	5,222	4,265	4,760	4,720	4,587	4,466	3,977	3,172	2,854	4,011	3,247	2,893	48,174
1990	3,278	2,673	4,133	4,422	5,630	5,209	5,188	4,528	3,214	5,660	4,299	3,275	67,887
1991	3,725	3,104											

Source: Commodity Futures Trading Commission

T.638



Average Open Interest of Soybean Futures at Chicago Board of Trade In Millions of Bushels

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1980	542,923	555,696	506,850	512,455	501,404	544,760	669,411	716,959	836,481	994,450	1,069,985	1,083,919
1981	760,433	618,363	556,355	586,500	516,510	517,640	497,162	452,323	440,217	472,908	485,995	482,498
1982	404,223	406,528	393,035	460,729	418,686	391,052	374,053	380,213	355,169	397,810	425,089	438,322
1983	442,828	456,830	416,479	505,813	462,581	420,022	455,472	670,320	714,951	748,973	655,300	631,981
1984	558,727	544,108	564,202	535,411	546,508	495,022	360,313	286,738	270,991	326,171	353,568	356,011
1985	348,140	364,738	327,450	317,610	306,381	329,845	314,415	324,314	315,912	353,915	375,558	367,207
1986	377,175	375,378	374,277	382,321	342,736	333,767	303,102	290,679	298,112	366,628	410,962	405,791
1987	373,975	374,970	384,749	448,282	472,715	460,889	396,495	364,262	373,807	524,582	537,224	589,553
1988	592,560	617,929	609,312	692,576	763,473	849,772	644,812	574,151	598,951	607,404	558,608	603,549
1989	598,499	572,342	579,959	513,682	484,011	472,263	417,035	379,628	404,830	503,966	482,161	493,360
1990	478,591	496,834	556,976	615,027	655,864	590,047	483,946	458,531	489,646	599,204	625,678	617,759
1991	546,555	552,104										

Source: Chicago Board of Trade

T.642

Soybeans Under Price Support Through the End of the Month (Cumulative Total from Current Season's Crop) In Thousands of Bushels

Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1978–9	0	6,403	31,008	43,015	58,278	61,489	62,365	63,146	63,508	65,087	—	—
1979–0	11	9,507	39,559	67,372	101,052	106,135	113,638	119,860	121,684	122,013	—	—
1980–1	22	11,705	28,541	67,744	100,809	116,167	125,480	130,236	132,346	133,160	—	—
1981–2	1,044	26,019	81,377	138,202	191,386	208,285	216,412	219,743	144,165	221,303		
1982–3	861	50,145	203,031	311,105	363,696	382,536	391,432	393,567	394,727	395,893		
1983–4	0	9,098	32,869	62,736	84,526	92,974	98,945	100,030	100,656	100,817		
1984–5	0	46,349	99,437	174,002	242,526	258,174	268,812	271,353	274,051	275,687		
1985–6	1,056	86,633	265,929	408,793	482,658	499,223	506,818	511,462	513,089	513,954	—	—
1986–7	313	34,971	154,207	240,072	299,018	316,598	321,327	327,233	329,094	329,766	329,971	—
1987–8	4,383	58,666	165,997	209,121	259,010	211,856	272,632	274,046	274,774	274,952	274,929	—
1988–9	896	16,805	44,627	81,131	106,033	115,210	118,487	119,356	119,674	120,033	120,034	—
1989–90	294	35,539	119,734	159,422	195,471	201,659	207,676	208,359	208,715	208,835	208,897	—
1990–1	172	26,109	124,610									

Source: U.S. Department of Agriculture T.639

Soybeans Crushed (Factory Consumption) in the U.S. In Millions of Bushels—One Bushel = 60 Pounds

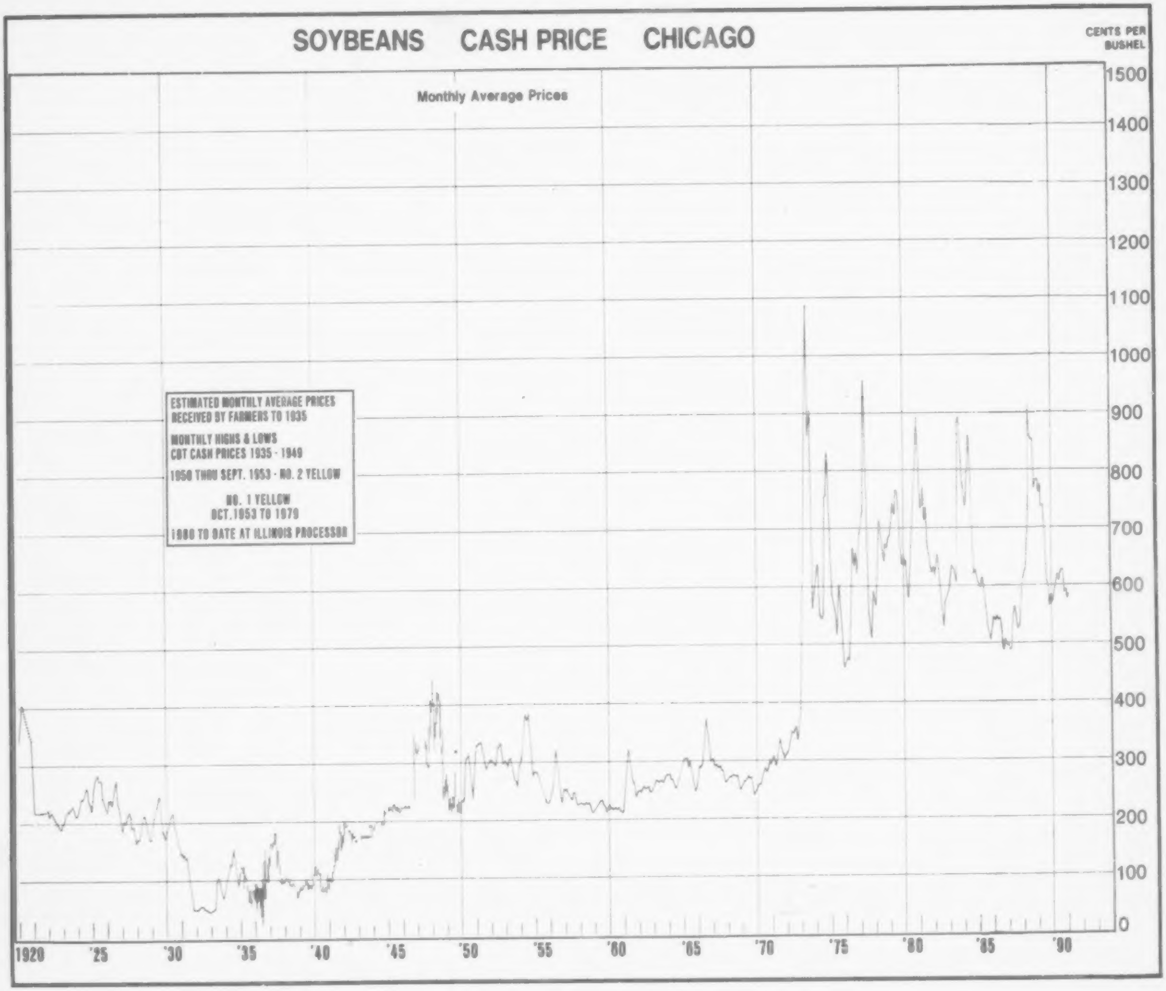
Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Total
1978–9	71.4	89.3	89.6	96.4	90.6	81.5	89.0	83.3	86.9	82.8	80.6	76.4	1,018
1979–0	75.9	95.8	101.4	104.4	106.6	100.0	102.2	92.0	93.8	82.7	84.9	83.7	1,123
1980–1	81.0	97.8	98.5	94.1	92.2	79.6	88.7	85.4	82.3	73.4	72.3	74.6	1,020
1981–2	75.4	104.5	97.6	102.5	94.9	86.7	85.1	81.0	86.6	77.1	70.6	67.8	1,030
1982–3	76.0	100.2	108.1	111.9	110.0	93.0	94.6	81.8	83.7	81.5	81.6	85.7	1,108
1983–4	86.6	96.4	86.6	89.4	93.8	79.2	86.0	74.6	79.4	70.6	69.0	71.1	982.7
1984–5	65.5	89.2	98.9	101.1	94.5	80.8	85.6	83.2	89.3	82.7	82.0	77.5	1,030
1985–6	76.5	94.3	96.7	100.8	99.6	81.4	91.6	84.4	86.3	79.6	83.1	78.4	1,053
1986–7	79.4	107.0	109.4	107.6	110.3	102.3	106.0	95.9	95.3	90.6	92.6	82.4	1,179
1987–8	79.7	102.5	111.2	110.8	106.7	99.8	107.6	102.6	98.0	89.2	88.0	78.3	1,174
1988–9	79.9	94.4	101.0	100.7	99.8	85.8	93.5	89.6	87.0	76.0	74.0	75.9	1,058
1989–90[1]	74.1	94.8	104.1	105.4	107.2	91.8	102.8	95.1	93.4	92.0	92.2	94.2	1,147
1990–1[1]	92.1	106.1	106.0										

[1] Preliminary. *Source: Bureau of the Census* T.641

Average Price Received by Farmers for Soybeans in the U.S. In Cents Per Bushel

Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
1978–79	620	626	641	649	658	699	716	706	706	736	736	707	666
1979–80	681	635	630	627	639	620	594	563	576	591	675	718	628
1980–81	759	768	818	780	780	750	759	760	740	705	713	671	757
1981–82	621	606	603	600	613	604	604	617	627	612	599	559	604
1982–83	522	506	534	546	556	566	582	609	606	590	627	757	565
1983–84	828	796	780	774	785	728	768	783	812	799	695	650	783
1984–5	609	607	601	582	591	577	588	588	570	562	542	510	584
1985–6	499	485	492	501	516	518	523	523	525	519	511	499	505
1986–7	485	455	464	467	470	469	473	490	520	536	525	502	478
1987–8	502	504	536	563	573	596	605	639	698	818	850	833	588
1988–9	793	753	743	753	769	741	751	729	720	705	683	607	742
1989–90	570	554	566	564	565	556	565	582	597	588	597	600	570
1990–1	599	587	578	572	548								

Source: Crop Reporting Board T.637



Average Cash Price of No. 1 Yellow Soybeans at Illinois Processor In Cents per Bushel

Year	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
1976–7	516	622	655	686	706	726	825	960	942	825	640	549	721
1977–8	642	507	584	594	573	565	658	681	701	676	662	647	624
1978–9	704	672	668	681	689	728	745	727	721	768	764	728	716
1979–0	813	656	652	653	636	642	607	580	604	610	722	745	660
1980–1	644	827	891	773	757	734	737	772	758	713	736	694	753
1981–2	540	630	628	623	630	624	616	642	656	631	620	573	618
1982–3	893	526	570	573	581	586	598	635	627	606	659	846	640
1983–4	621	846	820	777	767	737	797	798	861	791	685	663	786
1984–5	519	627	625	607	604	597	608	613	595	588	565	528	598
1985–6	496	505	519	532	545	538	547	540	544	543	533	500	530
1986–7	527	489	508	496	495	489	492	512	552	563	547	528	514
1987–8	527	532	564	594	617	621	630	671	731	913	859	852	676
1988–9	852	792	767	783	783	760	778	739	740	725	708	606	753
1989–90	600	564	570	582	572	585	600	600	620	609	619	626	596
1990–1	628	614	587	591	576								

Source: Agricultural Marketing Service, U.S.D.A. T.643

Stock Index Futures

The Dow Jones Industrials repeatedly set record highs during first-half 1990, despite signs that the U.S. economic expansion that began in 1982 had run out of gas. But the Dow's climb to its all-time "twin peaks" closing high of 2999.75, established July 16 and tied the next day, was a solo ascent. Trading resembled the 1973 "Nifty Fifty" bull market, when money managers all overloaded their portfolios with the same "one-decision stocks."

This time, P/E ratios did not approach the 50s, as they did in 1973. But by May, the number of "one-decision stocks" was down to perhaps 30, as bad news (or even good news that wasn't quite good enough) triggered institutional selling panics in individual issues. For example, on July 20, Storage Technology said that its full-year earnings would be "at the low end instead of at the high end" of analysts' expectations, and the stock fell 8 3/4 points to 25 3/4, despite a 250 percent gain in second-quarter 1990 earnings.

Shares in troubled firms were savaged, as evidenced by the meltdown in prices of New England and money center banks, many of which reported huge loan losses and sharply reduced or eliminated their dividends. The Dow Transports, which had become heavily overvalued on airline takeover speculation in 1989, had already gone out of favor before August 2. Following Iraq's invasion of Kuwait and the resulting explosion in jet fuel prices, it was doubtful whether several major airlines would survive. For the year, the Transports fell by 267.58 points, nearly 23 percent, to close at 910.23.

In contrast, the Dow Industrials also outperformed the broad market on the way down. The Dow hit a 1990 low of 2365.10 on October 11, when crude oil was over $40/bbl., but recovered as the Federal Reserve Board cut interest rates in the wake of the Bush Administration's budget deal with Congress. The Dow lost 4.3 percent on the year, closing at 2633.66. In contrast, the S&P 500 fell 6.6 percent to 330.22, the Dow Utilities dropped 10.8 percent to 209.70, and the broad-based Value Line Geometric Index fell by 24.3 percent to 195.99.

Results were even worse in Tokyo. Having ended 1989 at an all-time high of 38,915.87, the Nikkei Index of 225 stocks slumped by 38.7 percent in 1990 to close at 23,848.71.

Futures Markets

S&P 500 futures and options are traded on the Chicago Mercantile Exchange, which joined the Tokyo Stock Exchange and the Singapore Monetary Exchange in trading Nikkei Index contracts in 1990. Other futures include: the NYSE Index, Value Line Arithmetic Index, Major Market Index, Financial Times Index, Toronto Stock Exchange 300 Composite Index, and Germany's DAX Index, which began trading in Frankfurt in November 1990.

Average Open Interest of NYSE Composite Stock Index Futures at New York in Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1987	11,851	12,725	13,420	13,469	12,534	10,808	11,476	16,863	15,994	11,721	9,688	6,837
1988	5,530	5,760	6,013	6,785	8,372	7,400	7,003	7,668	6,689	6,816	7,600	6,419
1989	6,460	7,211	7,860	7,605	8,001	6,771	6,386	6,247	6,449	7,045	6,491	6,084
1990	6,350	6,098	5,443	4,925	5,129	5,160	4,732	6,079	6,003	5,272	4,983	4,554
1991	4,736	5,720										

Source: New York Futures Exchange T.643E

Average Open Interest of KC Value Line Stock Index Futures at Kansas City in Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1987	10,600	11,155	10,358	6,952	7,306	6,059	4,734	5,748	4,377	4,029	2,918	2,170
1988	1,538	1,655	2,814	3,059	3,266	2,269	1,570	1,389	1,332	1,229	1,564	1,580
1989	1,394	1,189	1,288	1,262	1,421	1,513	1,615	1,710	1,522	1,250	1,200	1,182
1990	1,245	1,355	1,463	1,514	1,544	1,404	1,311	1,297	1,250	1,210	1,325	1,381
1991	1,534	2,211										

Source: Kansas City Board of Trade T.643F

Average Open Interest of Maxi Major Market Stock Index Futures at Chicago (CBT) in Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1987	8,078	8,843	7,627	9,860	8,072	5,860	7,793	10,109	10,794	7,726	4,268	3,464
1988	2,442	2,849	3,901	6,309	8,000	4,890	3,072	2,957	3,591	5,878	4,956	7,206
1989	7,060	6,421	5,554	6,335	6,280	4,130	6,213	5,235	4,043	7,169	4,835	5,552
1990	5,274	4,273	5,261	5,847	7,686	8,773	8,398	6,480	7,837	8,106	7,873	9,891
1991	9,705	9,856										

Source: Chicago Board of Trade T.643H

High, Low & Closing Prices of the December S&P 500 Stock Index Futures at Chicago IMM

Year of Delivery		Yr. Prior to Del.	Delivery Year												Life of Delivery Range
		Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1987	High	251.40	286.50	293.00	309.20	310.00	305.30	315.90	322.90	342.35	336.20	333.00	258.20	248.90	342.35
	Low	243.20	248.10	278.00	287.10	278.50	281.70	291.50	306.30	317.30	311.30	181.00	225.00	220.80	181.00
	Close	244.55	277.80	287.75	294.95	293.10	293.75	305.95	322.80	333.80	325.85	259.35	232.00	243.15	—
1988	High	—	262.20	273.00	277.50	277.30	267.40	282.10	281.20	278.35	277.70	285.75	282.00	279.80	285.75
	Low	—	258.00	252.60	259.70	257.60	252.20	266.50	265.00	258.90	259.25	270.50	263.50	270.70	252.20
	Close	—	261.60	271.35	262.20	264.50	266.40	277.60	275.70	264.10	276.40	279.10	273.05	274.35	—
1989	High	—	309.80	313.10	312.80	322.10	333.60	338.00	352.45	358.80	359.85	364.50	347.75	354.90	364.50
	Low	—	306.00	298.90	299.60	306.20	314.50	322.00	323.95	344.40	345.50	323.85	332.30	345.80	298.90
	Close	—	309.50	301.55	306.65	320.60	330.05	325.00	352.25	356.35	352.70	343.40	347.60	352.08	—
1990	High	—	343.85	350.50	359.00	359.70	373.40	379.50	378.40	363.80	332.20	323.50	324.90	335.50	379.50
	Low	—	333.50	334.80	344.00	337.75	340.80	360.00	357.00	308.65	297.30	295.60	302.40	322.60	295.60
	Close	—	343.85	345.50	350.90	341.10	371.30	366.85	362.80	326.35	306.75	306.80	324.05	330.35	—
1991	High	342.20	352.80	380.60											
	Low	337.90	316.50	348.30											
	Close	339.10	352.80	375.70											

Source: Chicago Mercantile Exchange, International Monetary Market. T.643B

High, Low & Closing Prices of the December NYSE Composite Stock Index Futures at N.Y. Futures Exch.

Year of Delivery		Yr. Prior to Delivery	Delivery Year												Life of Delivery Range
		Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1987	High	144.50	163.00	166.50	175.25	175.45	171.45	177.15	181.20	191.45	188.15	186.35	144.70	140.00	191.45
	Low	139.70	143.00	158.25	164.00	157.75	159.00	164.10	172.25	178.25	174.45	103.00	126.35	124.10	103.00
	Close	139.70	158.80	163.95	167.60	165.35	164.80	172.25	181.05	186.80	182.65	144.35	130.40	139.20	—
1988	High	144.95	150.15	153.40	155.50	156.60	150.60	159.20	159.00	156.95	156.85	160.75	158.80	157.25	160.75
	Low	140.40	137.95	142.55	147.50	145.50	143.30	151.00	149.95	146.70	147.00	152.95	148.45	152.50	137.95
	Close	140.75	147.05	152.95	148.50	149.55	150.60	156.90	156.00	149.85	156.15	157.05	153.65	154.15	—
1989	High	163.40	173.00	174.70	174.95	179.75	185.70	188.10	196.10	199.30	199.80	201.95	192.25	196.15	201.95
	Low	162.00	160.80	167.45	167.50	172.00	176.25	179.50	180.90	191.70	191.95	176.00	184.20	191.30	160.80
	Close	163.40	173.00	168.70	172.15	179.25	183.85	181.25	196.10	197.95	195.90	189.75	192.15	193.75	—
1990	High	202.20	206.50	191.75	195.60	195.55	202.85	206.00	206.00	198.25	182.50	176.80	177.55	183.00	206.50
	Low	199.00	185.90	185.50	188.75	185.15	187.00	196.80	195.25	169.25	163.25	161.70	165.00	176.10	161.70
	Close	202.20	188.65	188.75	192.20	186.95	202.25	200.15	197.75	178.95	168.50	167.30	177.05	180.50	—
1991	High	186.10	192.25	213.20											
	Low	184.30	174.85	191.00											
	Close	184.65	192.25	204.85											

Source: New York Futures Exchange. T.643C

High, Low & Closing Prices of the December Value Line Stock Index Futures at K.C. Board of Trade

Year of Delivery		Yr. Prior to Delivery	Delivery Year												Life of Delivery Range
		Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
1986	High	226.25	228.35	235.30	250.00	251.90	251.60	247.65	250.10	237.60	240.00	231.00	233.60	235.60	251.90
	Low	219.00	217.50	224.20	235.20	236.00	237.00	240.70	221.30	218.70	210.80	215.50	220.90	226.50	210.80
	Close	222.00	223.65	235.30	246.90	240.30	248.00	245.80	222.45	235.15	218.80	230.65	230.00	231.00	—
1987	High	—	242.50	258.60	272.40	272.10	263.70	270.70	278.70	288.50	285.60	281.70	207.25	202.10	288.50
	Low	—	240.00	246.70	258.15	245.80	246.00	255.10	264.30	274.30	266.00	170.00	182.50	179.20	170.00
	Close	—	241.85	258.10	261.80	255.90	255.30	263.70	278.00	283.65	278.15	198.00	188.25	201.95	—
1988	High	—	—	—	242.65	245.75	239.55	253.80	255.60	251.60	248.90	251.50	245.90	242.90	255.60
	Low	—	—	—	230.80	231.55	227.25	240.70	244.40	236.60	237.00	243.80	230.80	236.50	227.25
	Close	—	—	—	234.25	238.70	237.10	253.80	251.20	240.90	247.80	245.10	237.30	241.12	—
1989	High	—	—	275.40	278.90	285.00	294.20	298.80	306.00	311.00	311.05	311.50	290.[illegible]	293.00	311.50
	Low	—	—	268.20	270.40	275.00	283.35	287.60	287.20	300.30	300.60	271.00	281.55	285.70	268.20
	Close	—	—	271.05	275.50	285.00	294.00	289.55	304.25	309.55	306.70	289.15	289.15	286.95	—
1990	High	—	281.75	287.80	295.00	293.65	296.55	302.10	297.20	282.35	251.50	235.50	236.10	244.60	302.10
	Low	—	278.25	281.00	280.70	274.95	277.05	287.50	281.50	237.00	217.00	211.70	214.80	234.10	211.70
	Close	—	281.75	285.60	289.45	276.05	295.90	292.40	284.30	250.00	226.80	217.75	235.30	240.87	—

Source: Kansas City Board of Trade. T.643A

Average Open Interest of S&P 500 Stock Index Futures at Chicago IMM in Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1986	61,697	73,610	90,736	75,590	93,638	95,400	101,017	109,169	121,724	136,823	144,103	128,305
1987	107,367	116,765	119,444	110,154	127,090	131,406	115,722	127,385	128,930	139,741	141,059	130,387
1988	115,006	120,909	114,792	114,269	129,134	116,524	104,644	118,008	120,657	121,970	137,715	131,134
1989	129,453	136,285	137,068	136,664	140,627	128,578	116,935	129,989	129,949	126,039	126,444	117,875
1990	112,196	124,279	124,460	118,350	127,718	118,865	113,050	132,568	159,607	151,990	157,440	160,260
1991	148,112	168,803										

Source: International Monetary Market (Chicago)

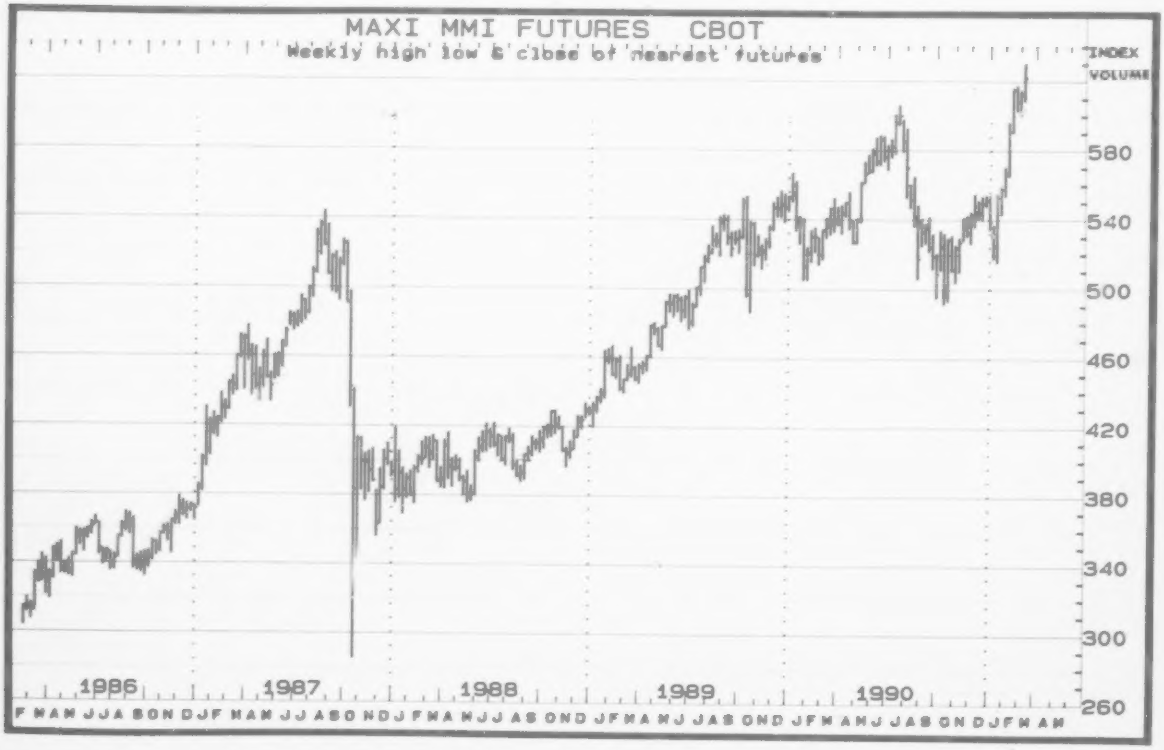
T.643D

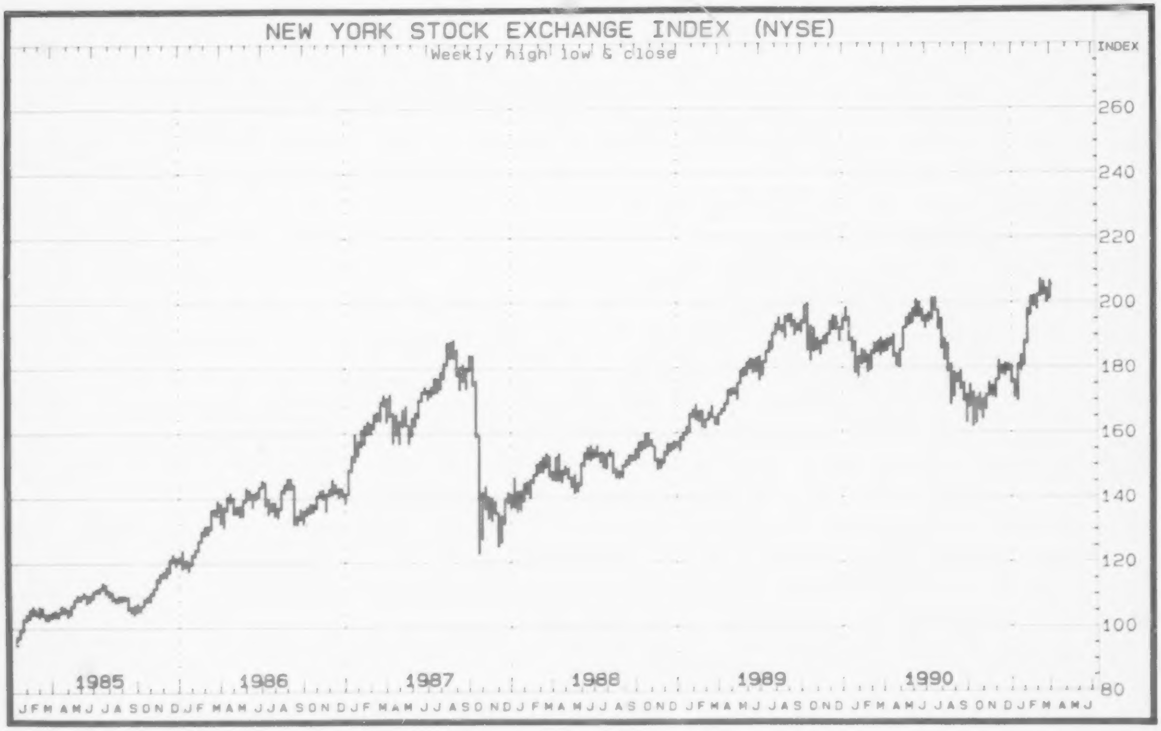
High, Low & Closing Prices of the September Major Market Maxi Stock Index Futures at Chicago BOT

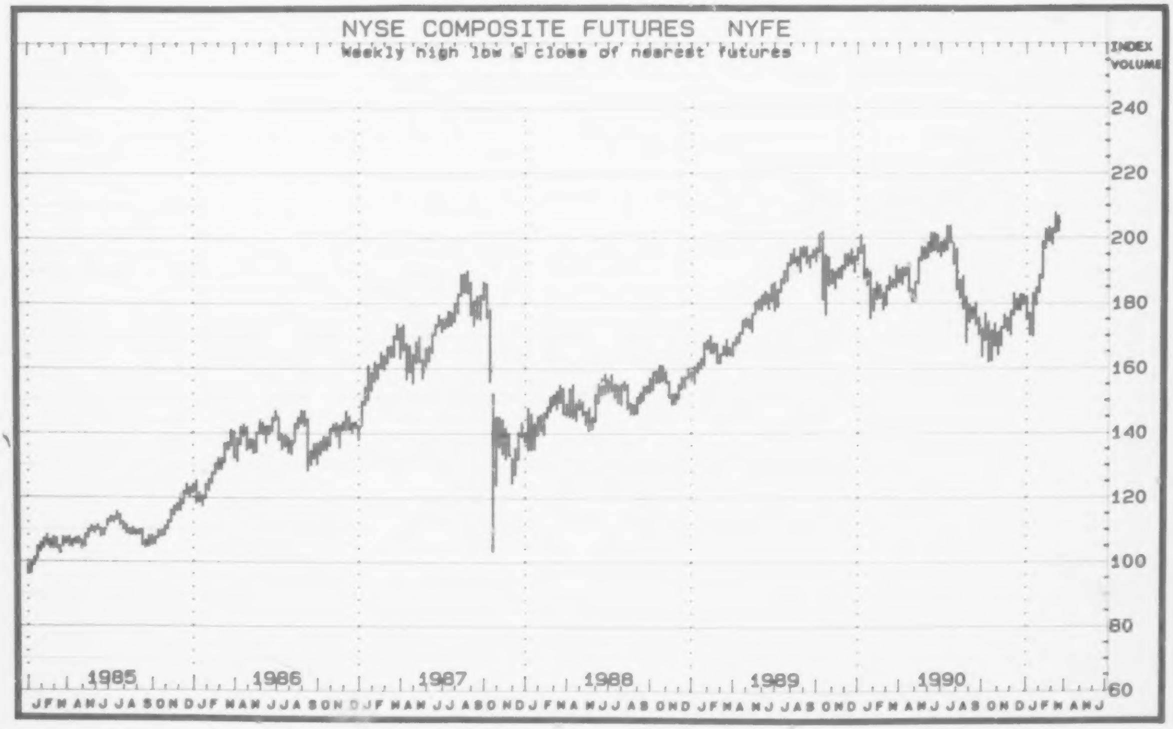
Year of Delivery		Delivery Year								Life of Delivery Range
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1987 High	—	—	—	477.50	472.00	486.60	500.60	543.30	535.50	543.30
Low	—	—	—	439.00	436.50	450.00	476.30	494.30	495.70	436.50
Close	—	—	—	452.00	453.60	476.90	499.75	530.40	497.18	—
1988 High	—	—	392.50	416.50	401.20	422.00	422.20	419.10	413.90	422.20
Low	—	—	386.50	387.50	377.70	398.50	398.50	387.40	388.50	377.70
Close	—	—	391.00	398.00	397.90	416.20	414.30	395.90	409.66	—
1989 High	—	—	—	—	—	501.40	522.20	541.50	542.50	542.50
Low	—	—	—	—	—	479.30	481.40	517.00	518.30	479.30
Close	—	—	—	—	—	483.10	522.10	537.15	522.85	—
1990 High	—	—	—	—	—	594.00	608.50	592.80	541.50	608.50
Low	—	—	—	—	—	573.30	581.00	506.00	511.50	506.00
Close	—	—	—	—	—	583.90	590.30	532.75	518.70	—

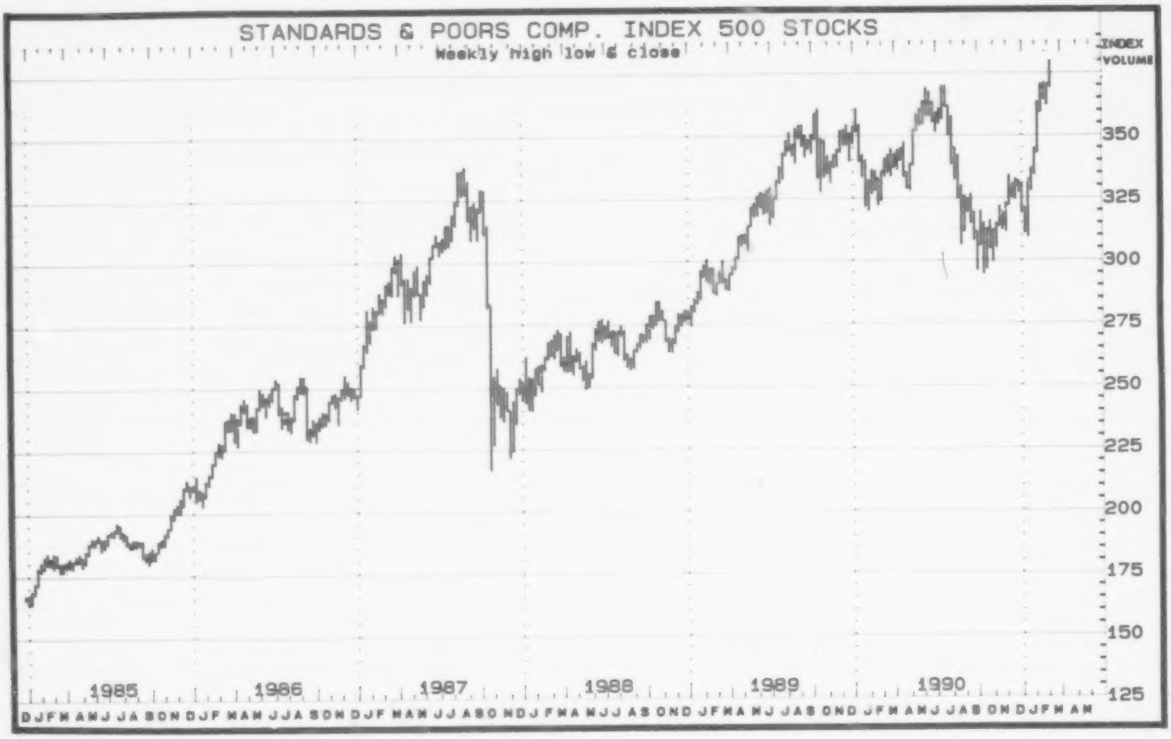
Source: Chicago Board of Trade

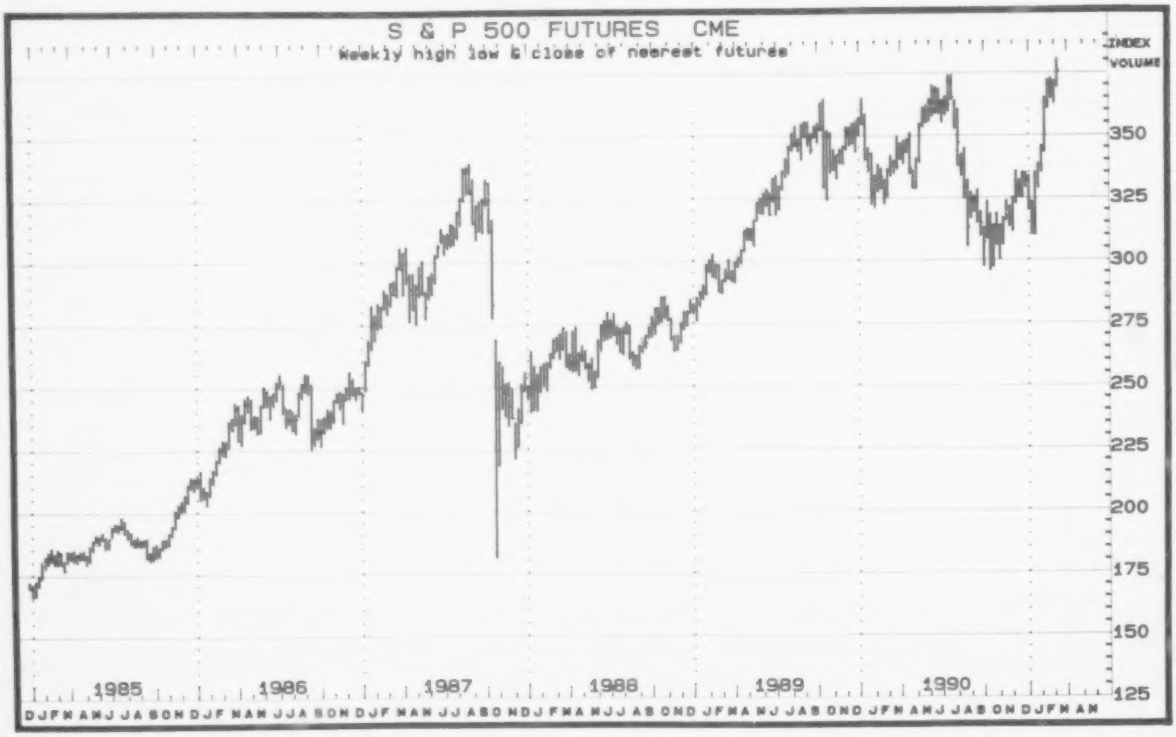
T.643G



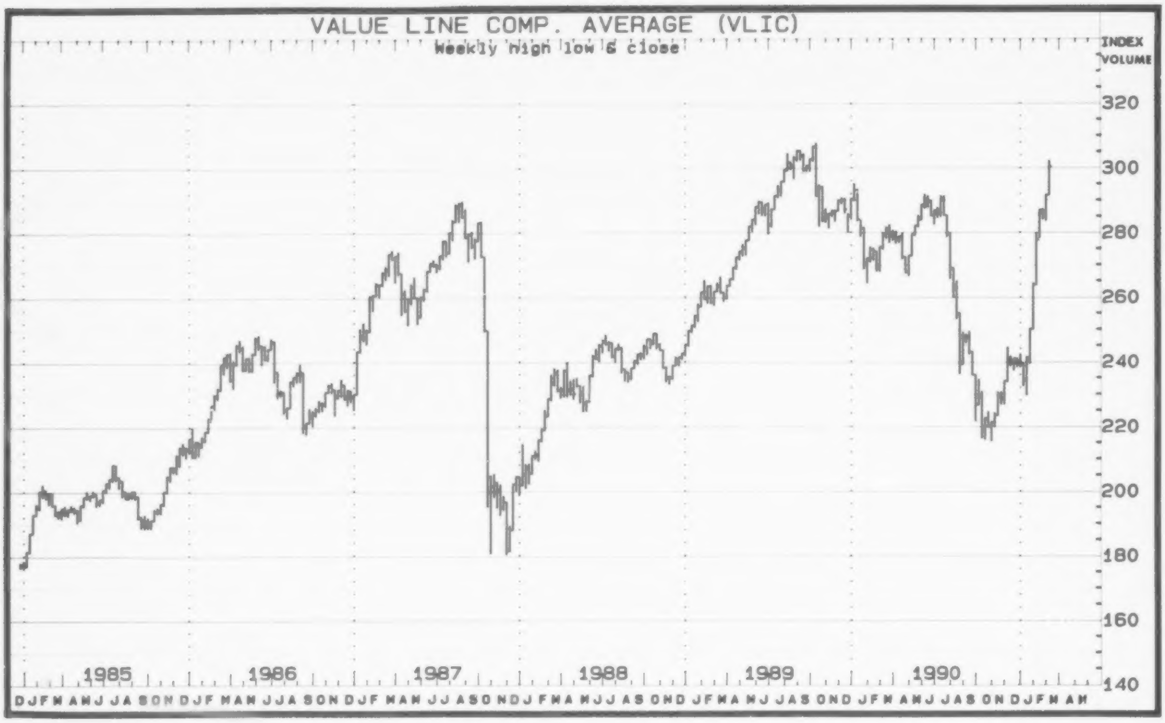

NEW YORK STOCK EXCHANGE INDEX (NYSE)
Weekly high low & close
INDEX
260
240
220
200
180
160
140
120
100
80
1985
1986
1987
1988
1989
1990
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J

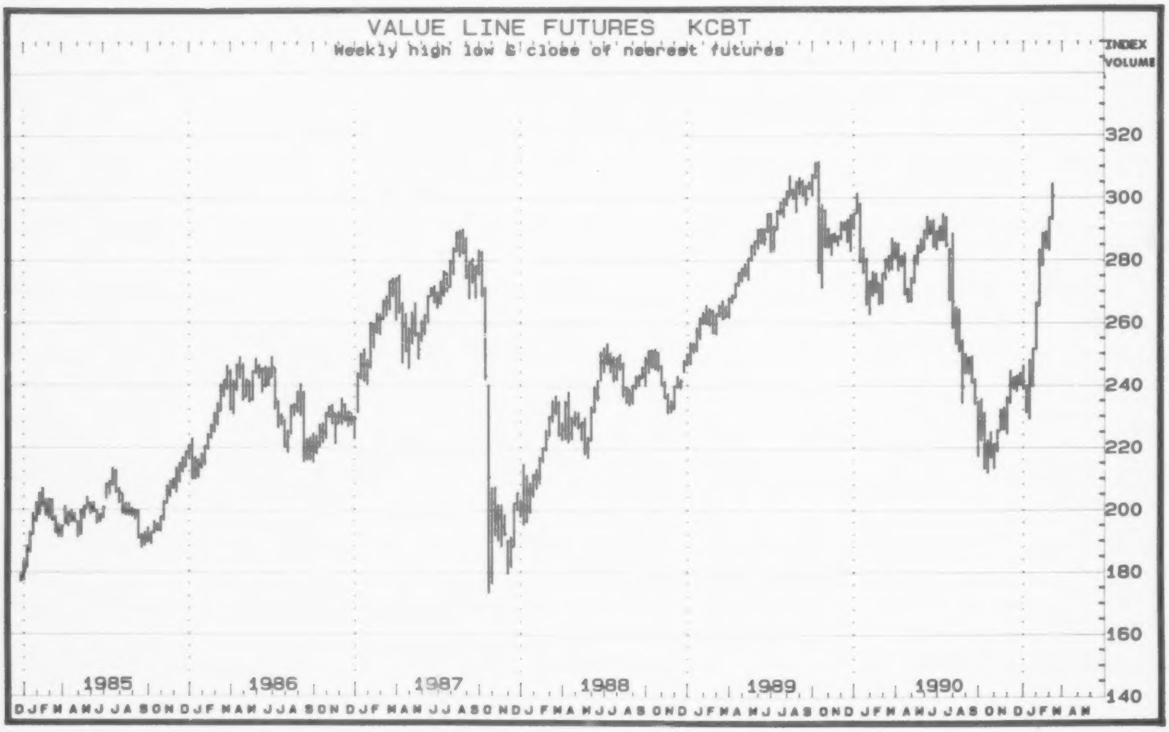

NYSE COMPOSITE FUTURES NYFE
Weekly high low & close of nearest futures
INDEX
VOLUME
240
220
200
180
160
140
120
100
80
60
1985
1986
1987
1988
1989
1990
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J


STANDARDS & POORS COMP. INDEX 500 STOCKS
Weekly high low & close
INDEX
VOLUME
350
325
300
275
250
225
200
175
150
125
1985
1986
1987
1988
1989
1990
D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M


S & P 500 FUTURES CME
Weekly high low & close of nearest futures
INDEX
VOLUME
350
325
300
275
250
225
200
175
150
125
1985
1986
1987
1988
1989
1990
D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M

STOCK INDEX FUTURES





Sugar

In 1990, world raw prices peaked in the spring at 16 cents/lb. and then eroded to about 9 cents in the fall. Weak import demand explained the decline. There were some short-lived price spikes, related to talk that Brazil might consider allocating more of its sugar production for conversion into ethanol, a vehicle fuel. However, world stocks remained low and were projected to be 19.4 million tonnes at the end of 1990/91. Middle East events were expected to have an impact on world sugar prices, and imports into the region were estimated at 3.5 million tonnes, below 3.8 million in 1989/90.

The world sugar situation in 1990/91 (Sept.-Aug.) was closely balanced, with production placed at a record 108.8 million tonne, raw value, and consumption at an all-time peak of 109.3 million. That compared with production shortfalls of about 700,000 tonnes in 1989/90 and of over a million tonnes in 1988/89. Global imports were due to fall to 28.7 million tonnes in 1990/91 from 29.5 million the previous season. Generally, imports account for about one-fourth of world production.

Worldwide sugar output in 1990/91 included an anticipated 38.5 million tonnes of beet sugar and 70.4 million of cane. The EC beet sugar crop was placed at a record 15.8 million tonnes, up almost 4 percent from 1989/90, with improved prospects in a number countries. In China, combined beet and cane sugar production was put at a record 5.9 million tonnes, as growers responded to government price incentives designed to encourage national self-sufficiency and discourage imports. India's cane output of 12.5 million tonnes was above the previous year's 12 million and helped replenish stocks, while also moving the nation from a net sugar importer to a net exporter.

Cuba, the largest cane exporter, was expected to produce 7.5 million tonnes, down from 8 million in 1989/90. About 6.8 million tonnes of its output were likely to be exported, below 7.3 million the previous season. Adverse weather hurt Cuba's crop and a lack of spare parts continued to plague sugar milling. Brazil's output of 7.5 million tonnes in 1990/91 was unchanged from the previous year, while the USSR's production of 9.1 million was down from 9.6 million the year before.

Global consumption was due to rise by less than 1 percent to 109.3 million tonnes in 1990/91. A drop of 300,000 tonnes in China's consumption to 7.6 million tonnes was expected. China is the third largest sugar consumer, behind the USSR with 14.2 million tonnes, and India with 11.6 million. China's per capita sugar use of less than 10 kilograms a year compares with the USSR's 50 kilograms.

Import demand by many developing nations weakened, in response to high world prices and foreign exchange scarcities, due partly to higher oil prices. Yet, world sugar trade remained relatively stable at 28 to 29 million tonnes in 1990/91. The five leading sugar exporters, accounting for 70 percent of world trade, were Australia, Brazil, Cuba, Thailand and the EC-12 (including intra-EC trade). The leading importers, accounting for almost half of all 1990/91 imports, were China, the EC, Japan, and the USSR. U.S. sugar imports, as set by the tariff rate quota for 1990/91, were 1.73 million tonnes.

Dramatic political changes in 1990 were likely to impact world sugar trade in the years ahead. The long-standing USSR-Cuban trade pact, through which Cuba supplied about 3.5 million tonnes of sugar to the USSR, was likely to be altered. Also, Eastern Bloc nations were no longer forced to trade under preferential arrrangments that required imports of Cuban sugar.

U.S. 1990/91 beet and cane production of 6.47 million short tons, raw value, was down 113,000 tons from the year before. Beet output was placed at 3.77 million tons, up 11 percent from the drought and freeze-damaged 1989/90 crop, but below initial forecasts, owing to dry weather in the Red River Valley. Cane production of 2.70 million tons was 15 percent under the previous year and was the lowest since 1980/81, mainly because of damage to Louisiana's crop from a severe freeze in December 1989.

For fiscal 1991 (Oct. 1990-Sept. 1991), U.S. sugar deliveries for domestic consumption and for manufacture of sugar-containing products were forecast at 8.48 million short tons, up 1.2 percent from fiscal 1990 and the largest in seven years. In fiscal 1987, sugar deliveries increased for the first time in ten years, as substitution of high fructose corn syrup (HFCS) for sugar began to level off.

A tariff rate quota on U.S. imports was implemented in fiscal 1991 in place of an absolute quota. Under the new system, the amount of imported sugar subject to a low duty continued to be determined on the basis of estimated U.S. sugar demand and domestic supplies. Sugar can be imported for domestic consumption above the amount of the quota, but at a much higher duty. Generally, the major suppliers to the U.S. are Brazil, the Dominican Republic, Australia and the Philippines.

Futures and Options Markets

World raw and white and domestic raw sugar futures are traded on the New York Coffee, Sugar, and Cocoa Exchange (CSCE). World raw and white sugar futures are listed on the London United Terminal Sugar Market. White sugar futures are traded on the Paris International Sugar Market and the London Terminal. Options on the No. 11 contract are traded on the CSCE, and options are traded on the London Futures and Options Exchange.

SUGAR

World Sugar Production, Supply & Stocks/Consumption Ratio (1,000 Metric Tons, Raw Value)

Marketing Year	Beginning Stocks	Production	Imports	Total Supply	Exports	Domestic Consumption	Ending Stocks	Stocks/% Consumption
86/87	25,904	103,356	27,375	156,635	28,116	105,151	23,368	22.2
87/88	23,368	103,347	27,639	154,354	27,801	105,843	20,710	19.6
88/89	20,710	105,485	29,084	155,279	28,939	106,588	19,752	18.5
89/90[1]	19,752	108,301	28,589	156,642	29,376	108,544	18,722	17.2
90/91[2]	18,722	109,933	27,854	156,509	27,580	110,275	18,654	16.9

[1] Estimate. [2] Forecast. *Source: Foreign Agricultural Service, U.S.D.A.*

United States Sugar (Cane & Beet) Supply and Utilization In Thousands of Short Tons (Raw Value)

	Supply								Utilization						
	Production			Offshore Receipts									Domestic Disappearance		
														Military & Civilian	
Year	Cane	Beet	Total	For-eign	Terri-tories	Total	Begin-ning Stocks	Total Supply	Total Use	Ex-ports	Net Changes in Invisible Stocks	Refin Loss Adjust.[3]	Imp. Blends & Mix-tures	Total	Per Capita
1982	2,774	3,160	5,934	2,964	80	3,044	3,461	12,439	9,371	137	28	53	—	9,153	73.58
1983	3,092	2,588	5,680	3,080	67	3,147	3,068	11,895	9,325	300	141	72	—	8,812	70.15
1984	2,831	3,059	5,890	3,444	24	3,468	2,570	11,928	8,923	429	–18	58	8	8,428	66.47
1985	3,098	2,869	5,967	2,797	36	2,833	3,005	11,804	8,678	464	–70	122	15	7,997	62.47
1986	3,066	3,201	6,267	2,223	31	2,254	3,126	11,647	8,411	557	40	28	30	7,711	59.65
1987	3,410	3,899	7,309	1,546	12	1,558	3,225	12,092	8,897	567	145	18	27	8,080	61.58
1988	3,429	3,658	7,087	1,388	19	1,407	3,195	11,689	8,557	415	–58	12	9	8,119	61.61
1989[1]	3,350	3,490	6,840	1,882	12	1,894	3,132	11,866	8,919	584	–12	38	6	8,243	61.94
1990[2]	2,630	3,350	6,063	2,918	10	2,928	2,947	11,938	9,045	660	—	20	10	8,405	62.61

[1] Preliminary. [2] Estimate. [3] Residual. [4] Forecast. *Source: Agricultural Marketing Service, U.S.D.A.* T.645

Sugar Cane for Sugar & Seed and Production of Cane Sugar and Molasses in the United States

								Farm Value		Sugar Production			Molasses Made	
			Production							Raw Value				
Year	Acreage Har-vested 1,000 Acres	Yield of Cane per Har. Acre Tons	for Sugar (1,000 Tons)	for Seed (1,000 Tons)	Total (1,000 Tons)	Sugar Yield per Acre Sh. Tons	Farm Price $ per Ton	of Cane used for Sugar (1,000 Dollars)	of Cane used for Sugar & Seed (1,000 Dollars)	Total 1,000 Tons	Per Ton of Cane Lbs.	Refined Basis 1,000 Tons	Edible (1,000 Gallons)	Total (1,000 Gallons[3])
1982	742	40.1	28,449	1,321	29,770	4.37	26.50	755,038	789,896	3,063	215	2,863	1,550	177,041
1983	768	36.7	27,201	960	28,161	4.00	27.80	755,574	781,393	2,930	215	2,739	1,850	175,875
1984	747	36.6	26,008	1,332	27,340	4.29	28.20	734,026	769,934	3,007	231	2,811	2,070	175,573
1985	770	36.6	26,877	1,336	28,213	4.20	26.70	717,690	751,550	3,033	226	2,835	1,650	178,539
1986	796	38.1	28,936	1,375	30,311	4.37	27.30	788,678	824,724	3,281	227	3,066	1,700	185,970
1987	824	35.5	28,026	1,192	29,218	4.28	29.30	822,376	857,415	3,333	238	3,115	1,630	183,866
1988[1]	845	35.4	28,479	1,425	29,904	4.28	29.30	834,435	876,187	3,398	239	3,176	1,550	191,208
1989[2]	852	34.5	28,943	1,425	29,426	3.95				3,176				
1990[2]	717	35.3			25,287	4.24				2,760				

[1] Preliminary. [2] Estimate. [3] Excludes edible. *Source: Statistical Reporting Service, U.S.D.A.* T.646

U.S. Sugar Beets, Beet Sugar, Pulp, & Molasses Produced from Sugar Beets & Raw Sugar Spot Prices

	Sugar Beets							Sugar Production		Raw Sugar Prices			Whole-sale
	Acreage										Cof., Sugar Exch.		
Year of Harvest	Planted (1,000 Acres)	Harv. (1,000 Acres)	Yield Per Har. Acre Tons	Production 1,000 Tons	Sugar Yield per Acre Sh. Tons	Price[1] Dollars	Farm Value $1,000	Refined Basis (1,000 Sh. Tons)	Equivalent "Raw Value"[2] (1,000 Sh. Tons)	World[4] Intern. Agreem. (Cents Per Lb.)	#11 World (Cents Per Lb.)	N.Y. Duty Paid (Cents Per Lb.)	List Price HFCS (42%) Midwest
1982	1,054	1,027	20.3	20,894	2.67	35.40	740,342	2,558	2,737	8.40	8.42	19.92	14.30
1983	1,081	1,056	19.9	20,992	2.56	37.00	777,718	2,522	2,699	8.46	8.49	22.04	18.64
1984	1,124	1,096	20.2	22,134	2.65	33.90	750,162	2,715	2,905	5.21	5.18	21.74	19.94
1985	1,125	1,103	20.4	22,529	2.72	33.80	761,236	2,835	3,033	4.06	4.04	20.34	17.75
1986	1,232	1,192	21.1	25,150	2.87	35.90	902,199	3,066	3,281	6.04	6.05	20.95	18.07
1987	1,267	1,252	22.4	28,072	3.19	38.20	1,073,584	3,115	3,333	6.75	6.71	21.83	16.50
1988[3]	1,327	1,301	19.1	24,810	2.70	41.10	1,019,691	3,176	3,398	10.10	10.17	22.12	16.47
1989[5]	1,324	1,295	19.4	25,129	2.63				3,176		12.79	22.81	19.24
1990[5]	1,397	1,369	19.7	27,028	2.72				2,760		12.03	23.35	19.70

[1] Includes support payments, but excludes Sugar beet payments. [2] Refined sugar multiplied by factor of 1.07. [3] Preliminary. [4] International Sugar Agreement, World Price. [5] Estimate. *Source: Statistical Reporting Service, U.S.D.A.* T.647

Raw Sugar N.Y. Spot Price (C.I.F., Duty/Fee Paid, Contract #12 & #14) In Cents per Pound

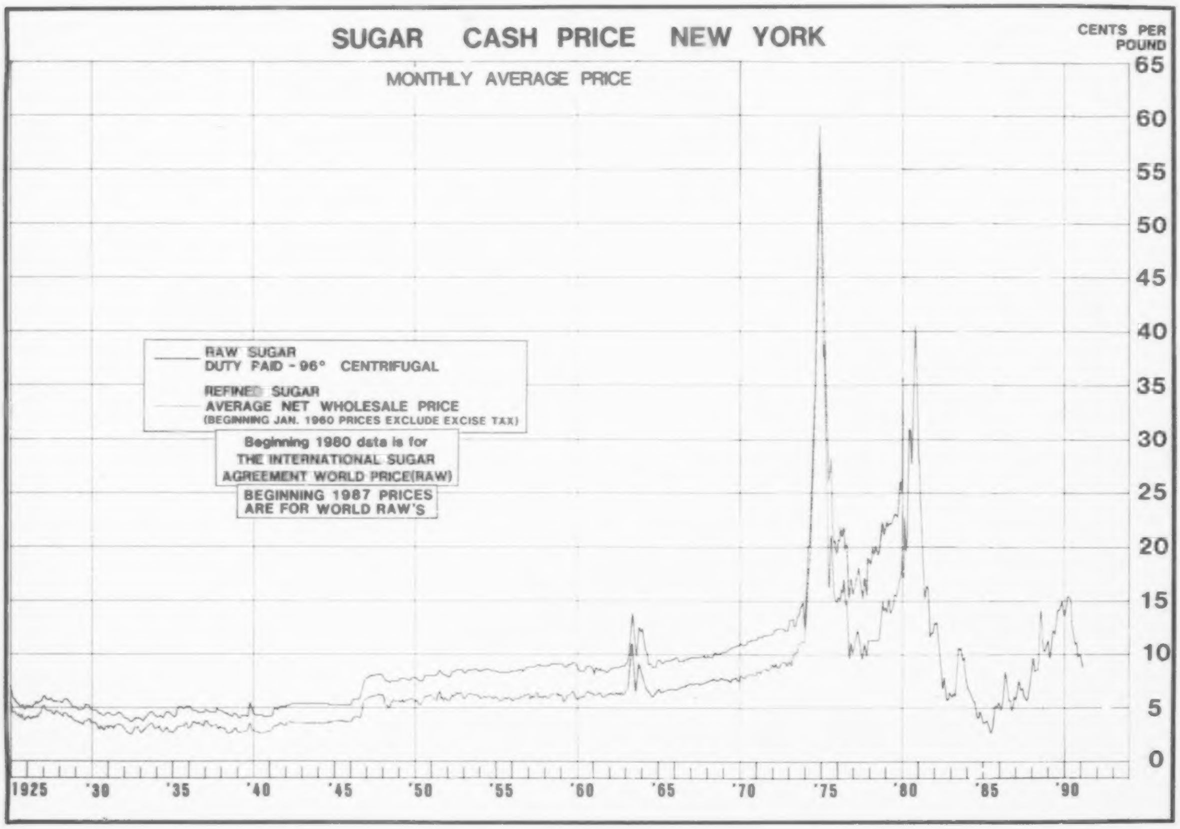
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	21.51	21.90	22.00	22.03	22.01	22.06	21.89	21.72	21.70	21.56	21.40	21.10	21.74
1985	20.72	20.38	20.91	20.97	21.09	21.27	21.23	20.59	19.51	18.68	18.89	19.89	20.34
1986	20.67	21.01	20.95	20.85	20.88	20.99	20.97	20.87	20.87	21.08	21.17	21.12	20.95
1987	21.50	21.76	21.76	21.81	22.01	22.06	22.07	21.88	21.88	21.69	21.75	21.76	21.82
1988	21.83	22.11	22.16	22.16	22.13	22.54	23.43	21.90	21.77	21.74	21.70	21.99	22.12
1989	21.88	22.07	22.12	22.30	22.45	22.99	23.56	23.57	23.50	23.14	23.24	22.84	22.81
1990	23.11	22.93	23.58	23.81	23.58	23.33	23.42	23.27	23.23	23.29	23.15		

Sources: Economic Research Service, U.S.D.A.; N.Y. Coffee & Sugar Exchange T.648

World Production of Sugar (Centrifugal Sugar–Raw Value) In Thousands of Metric Tons

Crop Year	Australia Cane	Brazil Cane	Mainland China	Cuba Cane	South Africa Cane	India Cane	Indonesia Cane	Philippines Cane	Poland Beet	West Germany	Thailand	United States	USSR Beet	Mexico	France	World All
1982–3	3,535	9,300	4,132	7,200	2,256	9,508	1,731	2,521	2,009	3,591	2,305	5,359	7,392	3,078	4,833	101,342
1983–4	3,414	9,400	3,825	8,330	1,462	7,042	1,762	2,381	2,141	2,726	2,305	5,275	8,700	3,242	4,153	96,542
1984–5	3,548	9,300	4,627	8,100	2,514	7,071	1,709	1,767	1,878	3,146	2,533	5,289	8,587	3,436	4,301	100,183
1985–6	3,404	8,100	5,535	7,200	2,247	7,983	1,728	1,561	1,811	3,430	2,586	5,473	8,260	3,928	4,297	98,938
1986–7	3,457	8,650	5,774	7,220	2,200	9,474	2,024	1,350	1,891	3,469	2,639	6,246	8,700	3,970	3,707	103,271
1987–8	3,528	8,457	4,706	7,400	2,235	10,000	2,127	1,400	1,823	2,968	2,704	6,483	9,560	3,806	3,966	103,270
1988–9	3,680	8,582	5,312	8,100	2,240	10,150	1,920	1,600	1,825	3,003	4,055	6,089	8,900	3,678	4,372	105,485
1989–90[2]	3,797	7,793	5,700	8,000	2,245	12,020	2,180	1,750	1,865	3,337	3,502	6,007	9,560	3,100	4,198	108,301
1990–1[1]	3,600	7,500	6,000	7,500	2,190	12,800	2,240	1,850	1,950	3,600	3,700	5,915	9,300	3,200	4,650	109,933

[1] Estimated. [2] Preliminary. *Source: Foreign Agricultural Service, U.S.D.A.* T.644



United States Production & Imports of Edible Syrups In Thousands of Gallons

	Production[2]						Imports			
	Syrups									
Year	Corn	Maple	Refiners'	Edible Molasses	Honey	Total	Maple Syrup	Edib. Molas. & Cane Syrup	Honey	Total
1983	1,334,557	1,150	1,000	1,850	17,314	1,355,871	1,287	2,336	9,277	12,900
1984	1,501,377	1,366	950	2,070	13,936	1,519,699	1,248	3,495	10,869	15,612
1985	1,721,980	1,325	1,100	1,650	12,669	1,738,724	1,323	4,164	11,676	17,163
1986	1,726,348	937	1,000	1,700	16,925	1,745,910	1,672	8,095	10,000	19,767
1987	1,780,607	791	750	1,630	19,154	1,802,932	1,476	6,905	4,921	13,302
1988[1]	1,824,168	1,098	500	1,550	17,864	1,845,180	1,293	7,295	4,724	13,312
1989[3]					18,500		1,623	4,762	7,250	13,635

[1] Preliminary. [2] Production of cane syrup, sorghum syrup, & edible molasses is of the fall of the preceding year. [3] Estimate.
Source: Agricultural Marketing Service, U.S.D.A. T.652

U.S. Exports & Domestic Consumption of Edible Syrups, Corn Sugar & Sugar In Thousands of Gallons

	Exports			Indicated Domestic Consumption					Per Capita Consumption in Pounds							
				Syrups									Sugar			
Year	Corn Syrup	Honey	Total	Corn	Maple	Cane & Refin. & Edib. Mol.	Honey	Total	Corn Sweeteners[2]	Caloric Sweeteners	Aspartame	Saccharin	U.S. Grown	Cane	Total	Total All Sweeteners
1983	1,223	630	1,853	1,333,334	2,437	5,186	25,961	1,366,918	52.6	130.4	3.5	9.5	48.0	47.1	71.0	137.6
1984	656	627	1,283	1,500,721	2,614	6,515	24,178	1,534,028	58.8	129.7	5.8	10.0	42.7	45.0	67.6	142.5
1985	534	549	1,083	1,721,446	2,648	6,914	23,796	1,754,804	65.6	129.5	12.0	6.0	44.0	38.6	62.5	142.4
1986	638	778	1,416	1,725,710	2,609	9,795	26,147	1,765,261	67.4	128.5	13.0	5.5	46.4	35.6	59.7	148.9
1987	938	1,045	1,983	1,779,669	2,267	9,285	23,030	1,814,521	68.6	131.6	13.5	5.5	53.9	33.6	61.6	147.2
1988[1]	1,720	1,258	2,978	1,822,448	2,391	9,345	21,330	1,855,514	69.4	132.4	14.0	6.0	54.0	34.8	61.6	152.4
1989[3]		900			2,500		20,000		69.9	133.2					61.9	
1990[3]		750							70.8	134.7					62.6	

[1] Preliminary. [2] Corn syrup & dextrose. [3] Estimate. *Source: Agricultural Marketing Service, U.S.D.A.* T.653

Sugar Deliveries and Stocks in the United States In Thousands of Short Tons, Raw Value

			Deliveries by Primary Distributors							Stocks (January 1)					
Year	Quota Allocation	Actual Imports	Cane[1] Sugar Refineries	Beet Sugar Factories	Importers of Direct Consumption Sugar	Cane Sugar Mills[1]	Total Deliveries	Sales of Refined Sugar For Export	Total Domestic Consumption[2]	Cane Sugar Refineries	Beet Sugar Factories	Comm. Credit Corp.	Refiners' Raws	Mainland Cane Mills	Total
1983			5,714	2,712	49	4	8,479	300	8,812	262	1,417	0	517	701	2,897
1984	3,175.0	3,130.6	5,722	2,732	39	13	8,454	429	8,428	225	1,103	0	528	592	2,448
1985	2,676.8	2,647.0	4,973	3,062	38	4	8,035	464	8,678	214	1,430	0	473	762	2,879
1986	1,849.9	1,845.7	4,667	3,120	28	3	7,786	557	8,411	197	1,189	220	523	834	2,964
1987	1,003.4	997.1	4,512	3,655	18	4	8,167	567	8,897	211	1,304	177	516	830	3,038
1988	1,056.7	1,024.8	4,356	3,832	20	5	8,188	415	8,557	184	1,546	0	401	996	3,128
1989[3]	3,124.9	2,995.8	4,860	3,449			8,309	584	8,919	187	1,372	0	487	1,008	3,053
1990[4]	2,314.8		5,047	3,385			8,475	600	9,045	155	1,412	0	381	899	2,847

[1] Sugar for direct consumption only. [2] Includes deliveries for U.S. military forces at home and abroad. [3] Preliminary. [4] Estimate.
Source: Department of Agriculture T.654

Sugar, Refined—Deliveries to End User in the U.S. In Thousands of Short Tons

Year	Bakery & Cereal Pdts.	Beverages	Confectionery[3]	Hotels, Restar. & Institutions	Ice Cream & Dairy Products	Canned, Bottled & Frozen Foods	All Other Food Uses	Retail Grocers[4]	Wholesale Grocers[5]	Non-food Uses	Non-industrial Uses	Industrial Uses	Total Deliveries
1983	1,387	1,248	1,087	94	385	454	431	1,168	1,713	131	3,076	5,123	8,199
1984	1,404	908	1,115	108	408	433	416	1,100	1,744	127	3,053	4,810	7,864
1985	1,494	340	1,059	85	456	428	441	1,045	1,874	131	3,123	4,349	7,472
1986	1,432	266	1,051	84	447	387	443	1,066	1,867	138	3,075	4,164	7,239
1987	1,513	212	1,146	91	449	398	534	996	2,040	149	3,199	4,400	7,599
1988	1,541	237	1,107	89	394	354	529	940	2,200	121	3,316	4,283	7,598
1989[1]	1,532	222	1,187	106	426	342	637	1,026	2,051	126	3,259	4,472	7,730
1990[6]	1,572	231	1,271	99	473	347	629	985	2,053	108	3,209	4,631	7,840

[1] Preliminary. [2] Used largely for pharmaceuticals & some tobacco. [3] And related products. [4] Chain stores, supermarkets. [5] Jobbers, sugar dealers. [6] Forecast. *Source: Stat. Rep. Serv., U.S.D.A.* T.649

Centrifugal Sugar (Raw Value) Imported into Selected Countries In Thousands of Metric Tons

Crop Year	Algeria	Canada	China	France	Iran	Israel	Japan	Korea Rep.	Malaysia	Morocco	Nigeria	Peru	United Kingdom	United States	USSR	West Germany	World Total[2]
1979	513	1,010	985	103	746	256	2,605		418	279	530		1,424	4,437	4,080	146	24,827
1980	569	859	946	69	785	119	2,265		510	332	709		1,404	3,802	4,981	150	26,480
1981–2	535	929	1,060	376	755	180	2,209		432	350	600		1,307	3,196	6,883	186	28,935
1982–3	636	912	2,563	357	472	302	2,239		433	205	941		1,050	2,393	7,363	183	29,085
1983–4	550	1,001	1,777	363	623	261	1,868		560	224	863	263	1,500	2,667	5,998	180	27,530
1984–5	595	1,054	1,348	360	607	319	1,903	838	580	319	439	130	1,300	3,021	5,704	175	27,937
1985–6	554	1,145	1,216	365	650	233	1,857	970	663	238	600	256	1,484	1,965	5,030	180	28,294
1986–7	680	1,119	1,507	367	750	229	1,695	973	661	297	578	341	1,235	1,503	5,057	161	27,326
1987–8	700	928	3,199	361	800	257	1,848	1,000	741	295	505	222	1,323	1,140	4,515	194	27,430
1988–9	650	711	2,462	382	850		1,909	1,009	797	283	400	126	1,429	1,753	5,200	180	29,084
1989–90[1]	700	914	1,100	295	964		1,751	1,120	830	276	350	150	1,320	2,288	4,700	225	28,589
1990–1[3]	710	805	2,000	330	930		1,751	1,130	890	280	350	200	1,350	2,628	4,450	205	28,235

[1] Preliminary. [2] Excludes U.S. trade with Territories. [3] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.655

Centrifugal Sugar (Raw Value) Exported from Selected Countries In Thousands of Metric Tons

Crop Year	Australia	Brazil	Czechoslovakia	Cuba	Dom. Republic	France	Thailand	Mauritius	Mexico	Netherlands	Philippines	South Africa	Swaziland	Un. Kingdom	USSR	World Total[2]
1979	2,002	1,860	242	7,269	986	2,347	1,190	641			1,150	884		76	244	26,373
1980	2,410	2,615	186	6,191	794	2,750	479	655			1,745	785		100	164	27,290
1981–2	2,620	2,984	160	7,734	816	3,226	2,419	560			1,314	851		122	268	33,044
1982–3	2,504	2,788	215	7,734	850	3,066	2,045	633			1,301	884		390	267	30,642
1983–4	2,425	2,801	115	6,792	956	3,300	1,411	644	833		999	569		240	148	28,842
1984–5	2,591	3,040	234	7,017	885	3,000	1,444	562	273		1,200	687		175	204	28,434
1985–6	2,858	2,690	200	7,000	480	2,580	2,060	622	192	200	296	1,207	366	275	176	29,365
1986–7	2,658	2,086	240	6,630	587	1,917	1,960	691	505	666	197	875	506	366	173	28,123
1987–8	2,797	2,131	200	6,500	531	2,535	1,891	687	967	366	129	925	394	340	175	27,612
1988–9	2,860	1,371	200	7,450	550	2,804	3,004	642	410	446	210	870	428	366	200	28,939
1989–90[1]	2,927	1,400	140	7,100	435	2,783	2,850	572	17	536	279	900	438	385	100	29,376
1990–1[3]	2,736	800	100	6,800	410	2,761	2,800	620	10	496	300	900	457	420	90	27,580

[1] Preliminary. [2] Excludes U.S. trade with Territories. [3] Estimate. *Source: Agricultural Marketing Service, U.S.D.A.* T.656

World Raw Sugar Price[2] In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1980	17.23	23.03	20.12	21.61	31.33	31.61	28.12	31.98	35.12	41.09	37.94	29.00	29.02
1981	28.04	24.27	21.77	17.90	15.08	16.35	16.32	14.76	11.66	12.13	11.96	12.96	16.93
1982	12.99	13.05	11.24	9.53	8.12	6.85	7.83	6.80	5.90	5.91	6.50	6.27	8.42
1983	5.98	6.40	6.18	6.71	9.27	10.80	10.53	10.52	9.46	9.67	8.52	7.82	8.49
1984	6.95	6.58	6.42	5.96	5.58	5.48	4.51	4.01	4.11	4.66	4.41	3.51	5.18
1985	3.59	3.66	3.78	3.37	2.77	2.74	3.15	4.35	5.14	5.01	5.53	5.37	4.04
1986	4.87	5.55	7.07	8.36	7.64	6.36	5.58	5.50	4.67	5.42	5.93	5.66	6.05
1987	6.47	7.32	7.51	6.64	6.71	6.40	6.03	5.57	5.79	6.60	7.28	8.25	6.71
1988	9.64	8.40	8.48	8.49	8.85	10.52	14.04	11.09	10.18	10.29	10.82	11.28	10.18
1989	9.69	10.49	11.54	12.14	11.93	12.63	14.01	13.96	14.13	14.42	15.02	13.52	12.79
1990[1]	14.38	14.63	15.39	15.24	14.62	12.99	11.92	10.92	11.00	9.77	10.00		

[1] Preliminary. [2] Contract no. 11–F.O.B. Stowed Caribbean port (bulk). *Source: Sugar Division, Commodity Stabilization Service* T.657

Average Refined Beet Sugar[1] (Wholesale)—Midwest Market In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1983	24.00	24.00	25.60	26.00	26.50	26.50	26.88	27.00	27.00	26.69	26.50	26.50	26.10
1984	26.85	26.50	26.50	26.50	26.50	26.25	25.75	25.31	25.00	24.60	24.12	24.00	25.66
1985	23.50	23.42	23.00	23.12	23.55	23.12	23.25	23.50	23.44	23.13	22.50	22.62	23.18
1986	23.45	23.31	23.25	23.50	23.30	23.00	23.38	24.20	24.19	23.50	23.00	23.00	23.42
1987	23.30	23.50	23.50	23.50	24.15	24.44	24.50	24.50	24.00	22.85	22.50	22.50	23.60
1988	23.25	22.75	22.75	23.45	24.19	25.25	27.10	27.75	27.50	27.25	26.75	27.80	25.49
1989	28.75	29.00	29.50	29.50	29.50	29.50	29.38	29.25	29.06	28.20	29.50	31.38	29.38
1990	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	30.10			

[1] These are f.o.b. basis prices in bulk, not delivered prices. To obtain delivered prices, add freight "prepays" & deduct discounts & allowances. *Source: Economics & Statistics Service, U.S.D.A.* T.658

World Stocks of Centrifugal Sugar at Beginning of Marketing Year In Thous. Tonnes (Raw Value)

Sugar-Making Season	Australia	Brazil	China	Cuba	France	West Germany	India	Iran	Italy	Japan	Mexico	Netherlands	Philippines	Switzerland	United Kingdom	U.S. & Insular	World Total
1985–6	603	1,386	1,922	1,600	1,016	566	1,803	151	350	216	1,394	149	229	229	124	1,596	28,203
1986–7	348	981	2,057	550	1,042	692	2,166	296	256	227	1,620	270	283	246	420	1,499	25,972
1987–8	310	845	1,679	360	1,034	707	2,960	296	439	192	1,485	233	209	237	398	1,358	23,408
1988–9	236	771	2,576	460	709	473	2,700	246	479	180	577	223	160	205	338	1,194	20,710
1989–90[1]	256	1,382	2,575	310	641	325	1,600	246	332	242	605	114	275	200	343	1,110	19,752
1990–1[2]	256	975	1,175	410	418	197	2,327	220	346	184	750	77	305	199	348	1,098	18,722

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.650

Average Open Interest of World Sugar (#11) Futures at New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981	63,312	62,881	58,495	61,084	59,485	64,688	64,930	66,655	59,708	56,262	63,421	72,341
1982	75,112	73,740	61,663	64,803	62,368	58,525	54,379	53,723	49,535	47,879	57,079	63,482
1983	71,695	82,030	81,988	88,663	89,703	98,999	93,593	94,514	88,524	80,498	83,762	84,159
1984	80,937	79,379	84,043	90,879	88,648	91,792	85,155	95,839	89,421	84,488	85,805	83,433
1985	88,595	88,208	81,731	84,538	86,437	90,837	84,727	91,241	92,998	79,755	92,348	98,473
1986	92,744	92,403	106,334	113,717	100,925	93,288	85,582	87,092	90,033	82,403	86,598	90,652
1987	98,697	103,115	95,910	93,886	96,153	98,463	97,889	98,401	100,395	99,286	103,205	126,916
1988	147,508	147,629	132,539	133,524	137,472	167,829	159,071	137,351	135,121	115,138	119,873	144,931
1989	123,554	126,504	146,798	157,254	146,878	162,097	186,211	179,077	168,840	152,276	171,354	164,757
1990	164,235	160,509	163,155	168,962	170,351	161,320	133,208	121,665	112,065	109,986	110,047	108,939
1991	124,637	129,805										

Source: Coffee, Sugar & Cocoa Exch., Inc., N.Y. T.660

Volume of Trading of World Sugar (#11) Futures at New York In Contracts

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	233,217	237,286	212,519	240,420	212,708	241,736	192,142	203,404	247,160	138,529	137,768	183,438	2,470,327
1982	166,913	209,386	199,263	217,689	138,377	177,657	176,641	144,980	151,639	140,262	160,656	154,657	2,037,020
1983	207,678	249,392	198,034	261,939	396,435	396,267	272,150	329,129	283,827	214,897	231,757	160,436	3,201,941
1984	192,451	205,499	252,489	227,150	175,268	213,491	163,955	228,279	263,419	234,008	154,735	124,579	2,449,549
1985	273,316	265,967	215,540	210,046	193,527	237,904	263,842	338,816	323,387	224,856	216,340	249,398	3,012,929
1986	308,044	268,053	382,053	519,027	343,746	289,900	281,124	235,555	328,830	258,744	173,612	195,126	3,583,814
1987	387,630	381,393	323,047	381,972	278,857	313,001	248,133	235,263	367,074	331,052	268,226	337,851	3,853,499
1988	603,565	605,773	348,510	391,971	474,693	705,498	807,381	442,101	450,116	276,010	332,463	381,040	5,819,121
1989	499,119	520,018	575,486	600,852	557,386	660,521	624,969	517,295	526,834	328,469	456,485	375,927	6,243,361
1990	519,886	523,591	588,021	505,492	598,320	532,937	384,116	441,608	448,195	372,925	303,065	206,645	5,424,801
1991	313,915	510,163											

Source: Coffee, Sugar & Cocoa Exch., Inc., N.Y. T.661

U.S. Deliveries[1] of All Sugar by Primary Distributors By Quarters In Thousands of Short Tons, Raw Value

Year	1st	2nd	3rd	4th	Total	Year	1st	2nd	3rd	4th	Total
1981	2,208	2,532	2,725	2,305	9,770	1986	1,819	1,907	2,069	1,991	7,786
1982	2,083	2,418	2,400	2,252	9,153	1987	1,908	2,001	2,146	2,112	8,167
1983	2,078	2,195	2,349	2,190	8,812	1988	1,951	1,983	2,147	2,107	8,188
1984	2,029	2,121	2,238	2,066	8,454	1989	1,902	2,056	2,161	2,190	8,309
1985	1,909	1,972	2,150	2,044	8,035	1990[2]	1,968	2,048	2,308	2,151	8,475

[1] Includes for domestic consumption and for export. [2] Preliminary. *Source: Department of Agriculture* T.659

United States Foreign Trade of Sugar (Raw & Refined) In Thousands of Short Tons

Year		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1988	Exports	10.4	23.1	13.0	22.4	9.0	41.6	36.0	28.3	23.0	38.2	16.8	615.6	877.4
	Imports	71	94	71	76	96	62	112	144	99	164	90	134	1,213
1989	Exports	24.2	36.2	27.2	27.3	22.8	33.8	18.4	45.6	50.4	51.7	45.6	28.9	412.1
	Imports	104	112	152	84	126	149	181	226	106	97	119	85	1,541

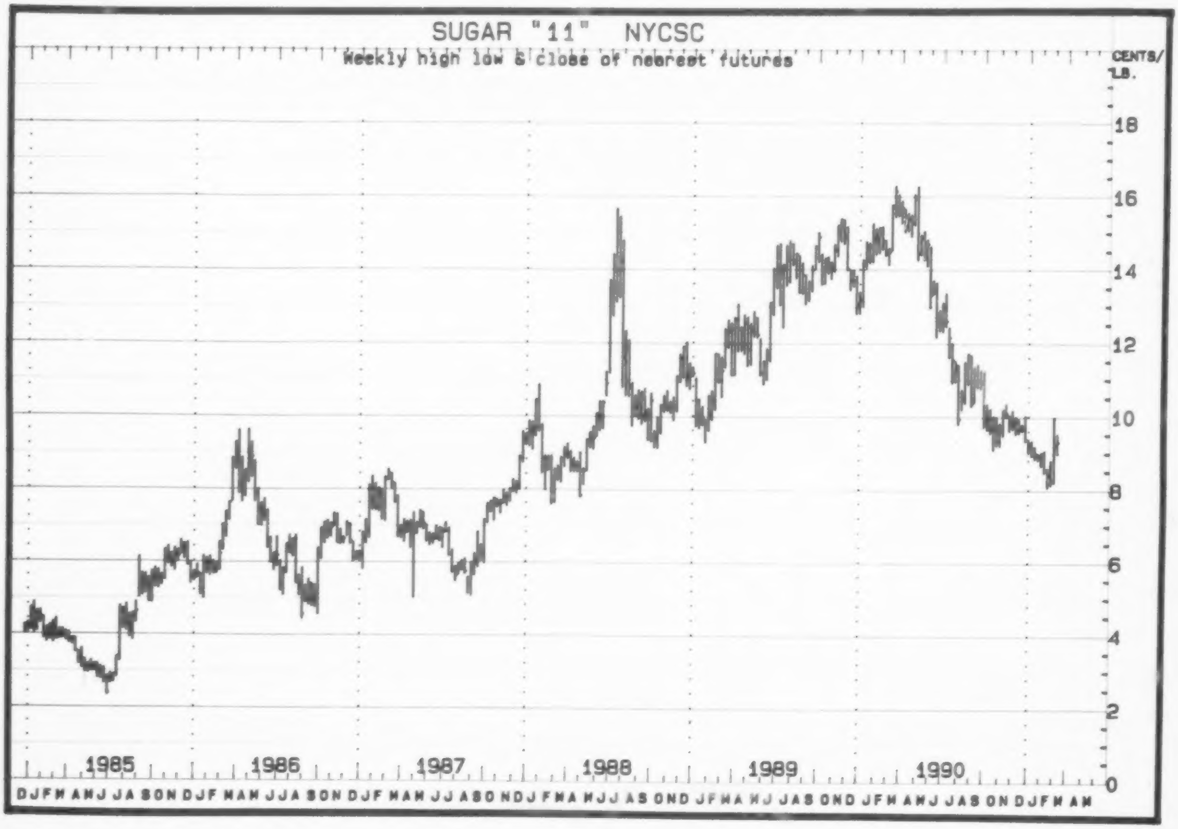
[1] Preliminary. *Source: Bureau of the Census*

High, Low & Closing Prices of March World Sugar (#11) At New York In Cents per Pound

Year of Delivery		Year Prior to Delivery												Delivery Year		Life of Delivery Range
		Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	
1986	High	7.40	7.12	6.43	6.05	5.21	4.69	4.33	5.45	5.59	6.20	6.15	6.39	6.56	6.13	6.52	8.27
	Low	6.02	6.13	5.70	5.05	4.58	3.98	3.34	3.59	4.41	5.17	5.25	5.73	5.38	4.97	5.60	3.34
	Close	6.22	6.31	5.83	5.06	4.17	4.28	3.63	5.22	5.13	5.65	6.14	6.13	5.62	5.92	6.28	—
1987	High	7.68	7.60	7.50	9.48	9.67	9.50	8.30	7.54	7.62	6.53	7.10	7.30	7.07	8.32	8.30	9.67
	Low	6.70	6.45	6.95	7.33	8.31	7.65	6.70	6.17	6.15	5.83	5.75	6.45	5.99	5.77	7.09	5.75
	Close	6.96	7.36	7.37	9.43	9.43	8.00	7.51	7.20	6.16	6.28	6.90	6.60	6.16	7.74	8.24	—
1988	High	8.01	8.89	8.70	8.95	8.05	8.03	7.73	7.58	7.02	7.35	7.73	8.12	9.55	10.83	9.74	10.83
	Low	7.18	7.04	7.97	7.40	7.22	7.40	7.15	6.53	6.39	6.43	6.79	7.31	7.86	9.06	7.56	6.39
	Close	7.30	8.41	8.65	7.45	7.75	7.52	7.39	6.71	6.56	6.96	7.59	8.01	9.49	9.64	7.99	—
1989	High	9.65	10.32	9.42	9.02	9.07	9.68	12.28	14.39	11.23	10.72	10.61	11.34	12.00	11.03	11.70	14.39
	Low	8.25	9.30	7.66	8.12	8.38	8.48	9.50	9.90	9.61	8.69	9.10	9.86	10.72	9.26	9.87	7.94
	Close	9.61	9.56	8.05	8.83	8.84	9.36	11.90	10.67	10.27	9.64	10.59	11.07	11.15	10.49	10.75	—
1990	High	10.62	10.10	11.29	11.83	12.02	12.10	13.58	13.85	13.61	14.33	14.42	15.38	14.32	15.25	15.17	15.38
	Low	9.90	9.07	9.70	10.74	11.22	10.62	10.73	11.94	12.18	12.37	13.58	13.96	12.78	12.98	14.13	
	Close	10.16	9.96	11.12	11.52	11.24	10.63	13.56	13.58	12.74	14.16	13.97	14.15	13.16	14.73	14.31	—
1991	High	13.03	13.80	13.71	14.35	15.04	15.22	12.98	12.73	11.39	11.10	10.33	10.33	10.01			
	Low	12.06	12.25	13.09	13.11	13.94	13.00	11.65	10.58	9.73	10.10	9.08	9.40	9.33			
	Close	12.32	13.35	13.28	14.25	15.03	13.08	12.32	10.79	10.30	10.11	9.42	9.82	9.37			
1992	High	10.10															
	Low	9.35															
	Close	9.35															

Source: Coffee, Sugar & Cocoa Exchange, Inc., N.Y.

T.662



Sulfur

U.S. apparent consumption of sulfur was virtually unchanged in 1990 at 12.8 million tonnes. About 90 percent of the sulfur was converted to sulfuric acid prior to its end use. Agricultural chemicals (primarily fertilizers) accounted for 70 percent of U.S. demand. Other leading uses included: chemicals, 12 percent; petroleum refining, 7 percent; and metal mining, 2 percent. Miscellaneous uses accounted for the remaining 9 percent. Most industrial products require sulfur in one form or another during manufacture.

World sulfur demand exceeded 1990 production of 58 million tonnes, requiring a drawdown in world stocks of about 1 million tonnes. Nearly two-thirds of the elemental sulfur produced comes from the refining of petroleum and natural gas and is thus independent of the demand for sulfur.

After Iraq invaded Kuwait, the U.N. embargo removed up to 1.7 million tonnes of Iraqi and Kuwaiti exports from the market, and that boosted world prices. Yet, the average U.S. price of sulfur in 1990 fell to $81 a tonne from $86.62 in 1989.

Two U.S. sulfur mines were nearing depletion in 1990. However, a Louisiana producer began constructing offshore platforms for a mine that will use the Frasch recovery process to produce 2 million tonnes annually. The mine was scheduled to come on line in 1992. U.S. sulfur production fell by 2 percent to an estimated 11.3 million tonnes in 1990.

World Production of Sulfur [All Forms] In Thousands of Metric Tons

Year	Canada	Chile	China	France	West Germany	Israel	Italy	Japan	Mexico	Poland	Saudi Arabia	Spain	Turkey	USSR	United States	Yugoslavia	World Total
1984	6,596	86	2,650	1,862	1,481	10	400	2,592	1,985	5,210	883	1,231	119	9,200	10,652	464	51,859
1985	6,645	199	2,900	1,723	1,769	25	521	2,498	2,140	5,203	1,100	1,455	135	8,530	11,609	391	53,771
1986	6,587	177	3,100	1,306	1,773	29	679	2,371	2,184	5,207	1,446	1,415	126	8,165	11,087	498	53,601
1987	6,619	167	4,500	1,252	1,825	40	740	2,316	2,458	5,324	1,432	1,195	141	9,250	10,538	436	56,068
1988[1]	6,930	178	4,750	1,168	1,795	50	830	2,447	2,378	5,090	1,450	1,340	138	10,265	10,746	425	58,096
1989[2]	6,625	266	4,900	1,051	1,885	50	830	2,523	2,367	5,090	1,400	1,235	125	9,350	11,592	428	58,348
1990[2]	6,600		5,200	1,100			880	2,650	2,350	4,900	1,650	1,150		9,000	11,325		58,000

[1] Preliminary. [2] Estimate. [3] Content of ore. *Source: Bureau of Mines* T.663

Salient Statistics of Sulfur in the United States In Thousands of Metric Tons of Sulfur Content

	Production of												Sales Value of Shipments— For Mine/Plant		
	Native Sulfur[2]												$ Per Tonne		
		Mines													
Year	Frasch-Process Total	Louisiana	Texas	Recovered Elemental Brimstone	Pyrites (Includ. Coal Brasses)	By-product Sulfuric Acid[3]	Other Sulf. Acid Compounds	Production (All Forms)	Imports Pyrites & Sulfur	Producers' Stocks Dec. 31[4]	Exports (Elemental)	Apparent Consumption (All Forms)	Frasch	Recovered	Average
1984	4,193	1,937	2,257	5,214	N.A.	962	283	10,652	2,557	2,419	1,334	12,679	109.20	80.02	94.31
1985	5,011	2,071	2,940	5,313	N.A.	957	328	11,609	2,104	2,799	1,365	11,968	122.62	92.11	106.46
1986	4,043	1,579	2,463	5,816	N.A.	919	309	11,087	1,347	2,748	1,895	10,586	123.79	92.06	105.22
1987	3,202	1,369	1,833	6,161	N.A.	1,003	173	10,539	1,599	2,316	1,242	11,323	107.15	79.63	89.78
1988[1]	3,174	1,183	1,991	6,444	N.A.	1,125	3	10,746	1,996	1,112	1,223	12,712	99.24	77.03	85.95
1989[5]	3,888	1,508	2,380	6,510		1,190	4	11,592	2,260	1,301	1,024	12,685	100.18	78.70	86.62
1990[5]	3,600			6,450				11,325	2,450	1,301	1,000	12,775			81.00

[1] Preliminary. [2] Or sulfur ore. [3] Basis 100%, produced at Cu, Zn, & Pb plants. [4] Frasch & recovered. [5] Estimates. *Source: Bureau of Mines* T.664

Sulfur Consumption & Foreign Trade of the United States In Thousands of Metric Tons

		Apparent Consumption of Sulfur in All Forms[3]									Foreign Trade			
											Exports		Imports	
Year	Net Import Reliance as a % of Apparent Consumption	Native Sulfur (Frasch)	Recovered Sulfur Shipm.	Total Pyrites Shipments	Smelter Acid Prod. Shipm.	Other Forms[2] Shipm.	Total	Imports of Recovered Sulfur	Shipments of Frasch Sulfur	Imports of Frasch Sulfur	Quantity	Value Ths. $	Quantity	Value Ths. $
1983	15	4,114	5,041	N.A.	831	302	10,988	1,091	4,111	604	992	109,298	1,695	129,110
1984	16	4,812	5,210	N.A.	962	283	12,679	1,835	5,001	722	1,334	156,067	2,557	200,189
1985	3	4,416	5,266	N.A.	957	328	11,968	1,380	4,678	724	1,365	189,248	2,104	199,240
1986	—	3,584	5,798	N.A.	919	309	10,586	621	4,108	726	1,895	251,664	1,347	142,220
1987	7	3,938	6,180	N.A.	1,003	173	11,323	806	3,610	793	1,242	139,431	1,599	152,096
1988[1]	16	4,956	6,470	N.A.	1,125	3	12,712	917	4,341	1,079	1,223	131,863	1,996	185,864
1989[4]	9	4,536	6,475		1,190	4	12,685	1,174	3,780	1,086	1,024	107,126	2,260	209,465
1990[4]	11						12,775				1,000		2,450	

[1] Preliminary. [2] Includes hydrogen sulfide, liquid sulfur dioxide. [3] Crude sulfur equivalent. [4] Estimate. *Source: Bureau of Mines* T.665

Sunflowerseed and Oil

World sunflowerseed production in 1990/91 was expected to rise by nearly 3 percent to 22.3 million tonnes, with gains in the EC and the U.S. Output has been increasing and now comprises over 10 percent of global oilseed production.

The Soviet Union, the leading producer, had a 1990/91 crop estimated at 7 million tonnes, down slightly from the previous season. The EC was forecast to produce 4.1 million tonnes, nearly 17 percent more than a year earlier. Argentina's crop of 3.8 million tonnes was unchanged from the year before. However, some of Argentina's sunflower acreage was being shifted into soybeans.

The U.S. sunseed crop was estimated at 960,000 tonnes or 2.11 billion pounds, 20 percent higher than the previous season. Acreage planted in 1990/91 increased by 5 percent. The weather was favorable, and yields averaged 1,132 pounds per acre, up almost 15 percent. Larger crops were seen in the Dakotas and Minnesota, while offtake in Kansas and Texas declined.

World exports of sunseed were estimated at 1.7 million tonnes, down slightly from the previous season. U.S. exports had been trending lower, but with 1990's larger crop, shipments were expected to increase slightly. Argentina's exports were forecast to decline; domestic consumption of sunoil has been increasing, so more seed is being processed, instead of reaching the export sector. The EC has been an importer of sunseed.

The world sunseed crush was forecast at 19.3 million tonnes or almost 2 percent more than the previous season. Argentina was a major processor of sunseed, crushing over 90 percent of its crop.

World sunseed meal production was put at 8.6 million tonnes, up almost 3 percent. The chief meal producers were the USSR, the EC and Argentina. Argentina, which exports virtually all the meal it produces, was expected to ship 1.4 million tonnes, two-thirds of world exports. Major importers of sunseed meal included the Netherlands, West Germany, and Britain. World consumption of meal was placed at 8.6 million tonnes, up almost 3 percent from a year earlier. Global ending stocks were estimated at 260,000 tonnes.

World sunoil production was 7.9 million tonnes, up slightly from the previous season. Sunoil ranks third in terms of production among the major oils. Consumption has increased in recent years, since sunoil is high in polyunsaturated fats.

World trade in sunoil was expected to fall somewhat to 2.2 million tonnes. Argentina's sales were forecast to reach one million tonnes, nearly half the world total. Growth in Argentine exports may begin to slow, as domestic consumption has been increasing. The U.S. exports sunoil to Egypt, Algeria, and others. Sales are subsidized under the Sunflower Oil Assistance Program (SOAP).

World ending stocks of sunoil in 1990/91 were put at 640,000 tonnes, down 9 percent.

World Production of Sunflowerseed In Thousands of Metric Tons

Crop Year	Argentina	Australia	Bulgaria	Burma	China	France	Hungary	India	Romania	South Africa	Spain	Turkey	United States	USSR	Yugoslavia	World Total
1988–9	3,000	170	367	129	1,180	2,335	708	397	580	400	1,123	1,100	813	6,157	410	20,328
1989–90[1]	3,800	92	447	120	980	2,118	701	500	780	400	906	1,200	798	7,070	417	21,648
1990–1[2]	3,800	158	374	115	1,120	2,250	554	600	780	450	1,300	850	957	7,000	426	22,276

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.668

Sunflowerseed Statistics in the United States

Crop Year Begin Sept.	Acres Harvested In Ths.	Yield per Harv. Acre Pounds	Farm Price $ Metric Ton	Value of Production Mil. $	Supply				Disappearance					
					Production	Imports	Stocks Sept. 1	Total	Crushings	Exports	Non-Oil Usage	Seed	Residual	Total
					In Thousands of Metric Tons									
1988–9	1,921	933	267	208.9	813	25	197	1,035	575	87	———	294	———	956
1989–90[1]	1,786	985	245	195.0	798	22	79	899	545	107	———	227	———	879
1990–1[2]	1,864	1,132	265	253.0	957	20	20	997	595	115	———	242	———	952

[1] Preliminary. [2] Estimate. *Source: Economic Research Service, U.S.D.A.* T.666

Sunflowerseed Statistics in the United States In Metric Tons

Crop Year Begin. Oct.	Sunflowerseed Oil							Sunflowerseed Meal						
	Supply			Disappearance				Supply			Disappearance			
	Stocks Oct. 1	Production	Total	Exports	Domestic	Total	Price $ per Metric Ton (Crude Mpls.)	Stocks Oct. 1	Production	Total	Exports	Domestic	Total	Price $ per Metric Ton 28% Protein
1988–9	71	235	306	212	57	269	500	4	298	315	6	306	312	135
1989–90[1]	37	220	270	155	80	235	535	3	280	295	33	287	290	110
1990–1[2]	35	237	280	160	85	245	585	5	295	305	10	290	300	125

[1] Preliminary. [2] Estimate. *Source: Economic Research Service, U.S.D.A.* T.667

Tall Oil

Tall Oil—Supply & Distribution in the U.S. In Millions of Pounds

	Supply (Crude)			Disposition										
						Non Food Products								
Beginning Oct. 1	Production	Stocks Oct. 1	Total Supply	Exports	To U.S. Territ.	Soap	Paint & Varnish	Lino-leum & Oilcloth	Resins & Plastics	Other Drying Oils	Lubricants & Similar Oils	Fatty Acids	Other	Total Nonfood Products
1982–3	1,557	151	1,708			4	30		25		4	1,042	64	1,151
1983–4	1,293	217	1,510				33		—			1,096		1,228
1984–5	1,321	113	1,434				20		16			994		1,087
1985–6	1,415	126	1,541			13	17		16		12	1,055		1,143
1986–7[2]	1,501	160	1,661			12	15		16		13	1,153		1,227
1987–8[2]	1,483	110	1,593			17	23		21		10	1,181		1,269
1988–9[2]	1,542	113	1,655			8	32		18		8	1,157		1,234

[1] Preliminary. [2] Estimated. *Source: Agricultural Marketing Service, U.S.D.A.* T.669

U.S. Tall Oil Consumption in Inedible Products In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	100.0	96.3	106.9	92.8	98.7	109.1	98.1	114.0	93.7	94.1	95.0	82.6	1,181
1984	100.8	100.7	105.6	97.8	104.2	113.6	117.2	105.2	111.2	100.6	95.7	85.2	1,238
1985	84.1	87.4	94.3	90.4	84.6	85.8	91.7	95.3	91.7	97.6	88.2	85.1	1,076
1986	86.3	93.1	106.0	106.1	95.3	99.5	93.7	101.4	91.1	103.4	80.3	93.7	1,150
1987	109.2	101.8	107.9	104.5	100.1	112.1	109.9	99.3	104.8	111.4	94.8	87.6	1,243
1988	109.2	103.2	111.0	108.0	112.3	104.0	105.9	110.6	111.4	103.1	100.0	91.5	1,270
1989[1]	111.5	103.0	107.7	107.3	102.9	105.0	101.6	111.9	88.8	88.8	84.3	82.9	1,196
1990[1]	100.4	92.4	105.9	91.2	86.5	84.6	78.5	82.4	69.1	69.7	78.4	78.2	1,017

[1] Preliminary. *Source: Statistical Reporting Service, U.S.D.A.* T.670

Tall Oil Production in the United States In Millions of Pounds

Crop Year		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1985–6	Crude	115.5	103.5	167.6	120.2	113.8	126.6	124.0	111.7	108.4	107.7	107.9	111.8	1,415.4
	Refined	9.8	9.2	8.7	8.3	8.0	7.9	8.7	8.7	8.2	8.2	9.4	9.7	104.8
1986–7	Crude	114.4	106.8	120.9	123.8	143.0	145.5	132.6	124.3	122.9	130.9	116.6	119.7	1,501.4
	Refined	9.1	7.8	8.2	9.0	8.9	8.6	9.2	10.4	8.4	10.5	9.7	9.6	109.4
1987–8	Crude	123.0	116.2	127.9	121.7	126.3	141.3	124.3	119.3	117.1	124.2	116.4	125.6	1,483.3
	Refined	9.2	9.0	8.9	9.5	11.3	10.2	9.1	9.3	5.5	8.2	9.3	10.1	109.6
1988–9	Crude	120.9	122.8	125.9	144.2	121.9	142.4	133.2	123.7	132.0	123.7	138.4	112.6	1,541.7
	Refined	9.8	8.7	8.0	9.5	7.5	9.4	9.1	8.0	9.5	8.6	8.3	7.0	103.4
1989–90[1]	Crude	123.2	121.2	107.0	92.1	120.0	137.1	134.6	126.7	122.1	118.0	120.6	102.4	1,437.0
	Refined	9.3	8.1	6.6	6.0	5.2	4.8	5.5	4.7	4.8	5.3	3.3	5.7	69.3
1990–1[1]	Crude	120.8	119.1	126.5										
	Refined	5.6	6.2	4.2										

[1] Preliminary. *Source: Bureau of the Census* T.0578

Tall Oil Stocks in the United States In Millions of Pounds

Crop Year		Oct. 1	Nov. 1	Dec. 1	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1
1985–6	Crude	125.9	125.1	158.7	167.6	154.1	160.7	182.7	183.4	181.1	175.5	184.1	169.7
	Refined	19.7	19.7	19.9	19.0	21.2	19.3	25.3	29.2	27.6	26.5	25.3	30.1
1986–7	Crude	177.8	164.9	173.9	196.1	185.6	199.2	211.6	204.4	209.7	194.5	171.6	161.2
	Refined	29.1	27.7	23.4	28.3	26.5	27.3	35.8	29.3	30.9	31.8	33.4	33.7
1987–8	Crude	160.1	144.0	147.7	161.8	148.3	159.1	165.4	155.9	138.7	145.3	148.8	115.0
	Refined	33.2	34.5	35.3	39.2	30.1	27.9	28.1	28.2	27.2	22.7	22.1	22.9
1988–9	Crude	109.7	107.6	103.1	106.4	120.1	122.5	125.9	127.7	134.1	127.9	133.4	125.0
	Refined	22.3	22.1	23.4	23.2	25.3	26.5	27.0	28.3	25.8	25.9	25.8	22.5
1989–90[1]	Crude	112.7	130.4	145.2	133.9	114.0	112.6	106.6	114.1	106.9	103.5	108.3	104.8
	Refined	23.4	25.8	28.5	23.3	22.2	21.4	20.3	16.6	17.2	17.2	18.0	15.7
1990–1[1]	Crude	101.5	83.1	76.6	82.0								
	Refined	15.3	34.0	35.8	35.1								

[1] Preliminary. *Source: Bureau of the Census* T.0578A

Tallow and Greases

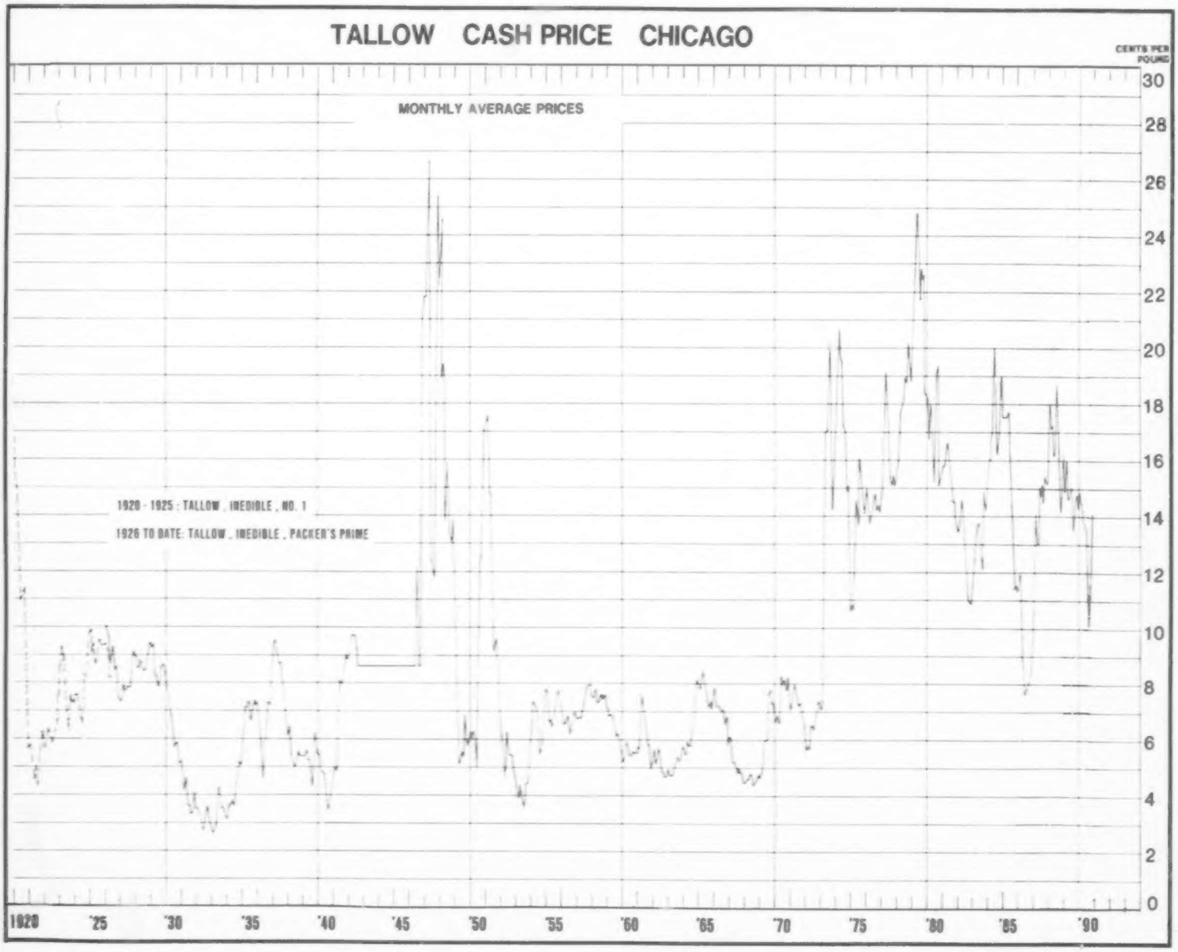
Production of edible tallow in the U.S. continued to decline in 1990/91 and was projected at 1.025 billion pounds, down from 1.165 billion a year earlier, according to the USDA. During the first half of the 1990/91 season, beef production remained near the previous year's level. The price premium of edible tallow over the inedible type declined in the late 1980s and into 1990, discouraging edible tallow output. From 1988 through the first three quarters of 1990, edible tallow prices showed a premium of one cent per pound over the inedible variety, compared with a 10-cent premium in 1984.

In recent years, fast food restaurants, under pressure from health-conscious consumers, have switched from beef fats to vegetable oils in frying. This factor has contributed to a decline in domestic demand for edible tallow, which dropped from 841 million pounds in 1989/90 to 650 million in 1990/91. However, exports have climbed and were expected to reach 375 million pounds in 1990/91, up from 324 million the previous season and 324 million in 1989/90. The U.S. is the leading exporter of tallow, and Mexico is its chief market.

In recent years, U.S. wholesale prices of tallow have been considerably below levels in the early 1980s. While prices averaged about 30 cents/lb. in 1981, they averaged only 15.8 cents in 1989 and were running at about 17 cents in 1990.

Prices of fancy, bleached tallow, c.i.f. Rotterdam, averaged $358/tonne in the fall of 1990. That was slightly above $347 in the October 1989-September 1990 year.

Worldwide tallow production in 1989/90 was estimated at 6.56 million tonnes, below 6.61 million the previous year, according to *Oil World*, the German statistical service. The largest producers were the U.S., the European Community, the USSR, and Australia.



TALLOW AND GREASES

World Production of Tallow and Greases (Edible and Inedible) In Thousands of Metric Tons

Year	Argentina	Australia	Brazil	Canada	Colombia	USSR	France	W. Germany	Italy	Japan	Mexico	Netherlands	New Zealand	United Kingdom	United States	Eastern Europe	World Total
1981	313	309	210	213	33	355	205	235	106	193	52	96	125	218	3,290	140	6,357
1982	276	316	220	220	32	350	188	232	96	196	47	91	125	218	3,228	138	6,241
1983	263	319	230	215	28	355	192	235	94	197	64	89	138	222	3,351	132	6,369
1984	273	300	200	217	30	360	190	250	110	198	69	98	131	238	3,275	136	6,326
1985	293	305	220	216	30	370	180	250	115	212	69	103	156	230	3,373	142	6,527
1986	305	328	200	217	30	375	175	256	115	215	58	119	126	220	3,375	156	6,580
1987	289	350	170	205	28	380	182	257	110	219	43	127	132	233	3,416	160	6,645
1988	279	456	190	200	31	390	186	255	100	218	54	125	146	200	3,475	155	6,819
1989[1]	278	489	272	203	32	350	179	250	90	220	65	125	133	208	3,520	145	6,963
1990[2]	272	501	258	195	33	360	180	252	85	219	60	126	112	210	3,530	142	6,972

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.672

Salient Statistics of Tallow and Greases (Inedible) in the United States In Millions of Pounds

	Supply					Utilization in Nonfood Products						Wholesale Prices, ¢ Per Lb.		
Year	Production	Imports	Stocks Jan. 1	Total	Exports & Shipments	Soap	Feed	Fatty Acids	Lubricants & Oils	Other	Total[2]	Edible, (Loose) Chicago	Inedible Chi. No. 1	Inedible Chi. Bleachable Fancy
1981	6,124	0	413	6,537	3,134	520	1,323				2,985	30.3	15.3	
1982	6,026	0	451	6,477	3,035	545	1,418				2,898	N.A.	12.8	
1983	6,129	0	368	6,497	2,931	574	1,397				2,813	N.A.	13.4	
1984	5,881	0	376	6,257	2,735	623	1,346				2,941	28.7	14.5	
1985	5,827	0	368	6,195	2,737	535	1,363				2,782	20.1	14.3	
1986	5,543	0	362	5,905	2,562	482	1,604				2,917	13.5	9.0	
1987	5,602	0	316	5,918	2,491	571	1,727				3,082	15.6	14.9	
1988[1]	6,158	0	407	6,565	2,807	461	1,864				3,147	17.9	16.6	

[1] Preliminary. [2] Includes small amounts used in drying-oil products in some years. [3] Estimate. *Sources: Economic Research Service, U.S.D.A.; Bureau of Labor Statistics* T.673

Edible Tallow: Supply, Disappearance, and Price, U.S. In Million Pounds, Rendered Basis

	Supply			Disappearance						
Calendar year	Stocks Jan. 1	Production	Total	Domestic	Exports	Total	Direct use	Baking or Frying Fats	Per capita (Direct use–Lbs.)	At Chi. Price[1] ¢ Lb.
1981	56	1,130	1,188	992	142	1,134	225	724	1.0	30.3
1982	54	1,110	1,163	1,030	75	1,106	303	679	1.3	N.A.
1983	59	1,260	1,319	1,166	107	1,273	480	632	2.0	N.A.
1984	46	1,340	1,386	1,295	54	1,349	395	821	1.7	28.74
1985	36	1,611	1,647	1,526	80	1,595	458	1,015	1.9	20.14
1986	41	1,523	1,564	1,469	62	1,531	429	973	1.8	13.49
1987	33	1,258	1,291	1,186	65	1,251	239	890	1.0	15.60
1988	40	1,296	1,336	1,148	139	1,287	197	840	.8	17.86
1989[2]	48	1,167	1,215	1,132	45	1,177	230	750	.9	15.76

[1] Loose, average wholesale, Chicago. [2] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.673A

Average Wholesale Price of Tallow, Inedible, No. 1 Packers (Prime), Delivered, Chicago In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1981	15.8	15.8	16.0	16.5	15.6	16.0	15.2	15.0	14.5	14.5	13.9	13.6	13.6
1982	13.4	13.4	14.1	14.4	14.5	14.3	13.6	12.0	11.4	11.0	11.0	10.8	12.8
1983	11.4	12.0	12.5	13.6	13.8	13.2	12.1	13.7	14.9	14.2	14.8	15.1	13.4
1984	16.0	16.0	16.8	17.0	19.1	20.0	17.1	16.2	16.9	17.9	19.0	17.5	17.5
1985	17.5	17.5	17.5	17.7	16.1	14.3	13.6	12.1	11.4	11.5	11.3	11.5	14.3
1986	12.0	11.8	9.4	8.9	8.7	7.6	7.8	7.8	8.1	8.4	8.5	9.5	9.0
1987	15.84	15.15	13.03	12.98	15.42	14.73	15.17	14.50	15.53	15.23	15.17	15.56	14.86
1988	18.00	17.08	17.25	16.17	15.93	17.18	18.81	17.44	16.00	15.02	14.18	16.33	16.62
1989	14.90	16.00	14.86	14.60	14.70	15.10	14.48	13.52	14.13	15.25	15.50	15.50	14.88
1990	14.87	14.50	14.47	13.77	13.66	N.A.	13.50	10.12	12.00	13.42	14.09		

Source: Economic Research Service, U.S.D.A. T.674

Tea

Tea prices dropped to a two-year low in mid-1990, with the Mideast crisis and other factors contributing to the slide. The embargo again Iraq, a major tea importer (taking 80.5 million pounds in 1989), was a negative influence. Imports by the USSR and U.K. declined in 1990, and the slippage in the U.K. was said to reflect hot summer weather, which caused consumers to forsake tea for cold drinks. Iced tea, while popular in the U.S., never caught on in Britain.

The U.K. is the largest tea importer, while the U.S. holds the third or fourth spot. The USSR was a large importer during the late 1980s, as some of its tea growing area was damaged by the Chernobyl nuclear accident. World tea production in 1990 neared 2.5 million tonnes, a record level and up from the previous year's 2.47 million.

India is both the leading producer and consumer of tea. China is the second largest producer, with planted acreage in excess of 2.5 million acres. In recent years, China has become the major supplier of tea to the U.S., accounting for 22 percent of U.S. imports in 1989, most of which was black tea. A number of countries import green, oolong, and other teas from China.

Kenya is rapidly expanding its tea output and is now the world's fourth largest producer. The U.K. is the major buyer of Kenyan tea, taking about 60 percent of the country's exports.

In January 1990, Sri Lanka signed an economic cooperation accord with Iraq, under which the latter would buy 33,000 tonnes of tea, up from 27,000 tonnes in 1989.

U.S. per capita tea consumption declined in the 1980s, after showing strong growth in the 1960s and 1970s. Competition from soft drinks, fruit juices and herbal teas contributed to the drop. About 80 percent of U.S. consumption is in the form of iced tea. In the U.K., the increased use of tea bags, which are more efficient than loose tea, has played a part in the slide in per capita consumption.

London auction prices in the first quarter of 1990 averaged nearly $1.00/lb., but fell to under 80 cents by mid-summer. London prices averaged 91.2 cents/lb. in 1989, up from 81.3 cents in 1988 and 77.6 cents in 1987. International efforts to stabilize world tea prices under the auspices of the United Nations Food and Agriculture Organization (FAO) focused on implementing minimum export standards to improve tea quality and generic tea promotion programs to increase consumption.

World Tea Production, in Major Producing Countries In Thousands of Metric Tons

Year	Argentina	China (Mainland)	Sri Lanka (Ceylon)	India	Indonesia	Iran	Japan	Kenya	Malawi	Mozambique	Bangladesh	Taiwan	Turkey	Tanzania	USSR	World Total
1978	26.3	268.0	199.0	563.8	73.2	23.0	104.7	93.4	31.7	18.1	38.0	25.9	86.5		111.2	1,755
1979	32.1	277.1	206.4	551.9	73.3	21.0	98.0	93.3	32.6	19.7	35.9	27.1	102.0		117.6	1,782
1980	40.0	304.0	191.4	569.6	98.7	20.0	102.3	89.9	29.9	22.3	40.0	24.5	95.9	17.1	129.8	1,857
1981	33.0	343.0	210.1	560.0	110.2	20.0	102.3	90.9	32.0	23.3	41.3	25.2	42.6	15.9	136.5	1,870
1982	40.0	397.0	188.6	560.7	90.2	25.0	98.5	96.0	38.5	21.0	40.9	24.1	68.0	16.2	139.8	1,934
1983	45.0	401.0	180.0	581.5	111.5	25.0	102.7	119.7	32.0	14.0	43.7	24.3	101.0	15.6	145.6	2,035
1984	46.0	414.0	209.2	639.9	126.2	46.8	92.5	116.2	37.5	11.0	38.2	24.4	113.7	16.5	151.1	2,194
1985	35.0	432.0	215.3	656.2	132.3	41.5	95.5	147.1	40.0	7.0	43.3	23.2	137.1	16.5	152.1	2,292
1986	40.0	461.0	212.7	620.8	129.5	48.5	93.6	143.3	39.0	5.0	37.6	23.9	148.3	15.1	146.6	2,283
1987	43.0	508.0	214.6	674.3	127.5	45.6	96.3	155.8	31.9	3.0	40.6	25.6	140.7	14.5	120.0	2,363
1988[1]	45.0	545.0	228.2	701.1	135.7	55.6	89.8	164.0	40.2	1.5	42.6	23.6	153.2	14.6	110.0	2,478
1989[2]	45.0	540.0	207.0	682.4	150.0	55.0	95.0	180.6	39.5	1.5	38.4	24.0	135.0	16.2	110.0	2,453

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.677

World Tea Exports from Producing Countries In Thousands of Metric Tons

Year	Argentina	Bangladesh	Brazil	China	India	Indonesia	Japan	Kenya	Malawi	Mozambique	Papua N. Guinea	Sri Lanka (Ceylon)	Taiwan	Vietnam	Zimbabwe	Grand Total
1978	31.0	30.9	7.8	86.9	176.1	56.2	3.4	85.0	30.6	16.7	7.0	192.6	20.4		7.6	795.1
1979	29.6	31.9	7.3	106.8	199.6	53.6	3.1	94.0	31.0	18.2	7.0	187.5	19.3		7.8	834.9
1980	33.5	31.0	7.9	108.0	224.0	67.7	2.7	74.8	31.3	18.0	7.9	184.5	18.2		6.2	858.8
1981	25.8	29.2	8.2	92.0	241.2	71.3	2.7	75.6	31.5	18.0	7.0	182.8	15.5		6.4	849.8
1982	33.1	34.4	9.0	105.8	189.9	63.7	2.5	79.8	37.1	19.0	6.5	181.1	10.0	9.5	7.2	819.5
1983	44.7	30.0	8.1	125.1	208.5	68.6	2.1	100.6	35.8	13.4	7.2	157.8	11.6	10.0	8.3	867.7
1984	42.1	23.1	9.3	145.3	217.0	85.7	2.8	91.2	37.2	7.6	7.5	204.2	11.9	11.0	9.8	942.7
1985	30.7	30.3	8.8	136.9	214.0	90.1	1.8	126.1	37.8	3.2	7.0	197.6	9.1	12.0	10.0	957.1
1986	36.3	27.7	10.9	172.0	203.1	79.0	1.3	116.5	40.2	1.8	5.2	207.6	9.0	12.5	11.8	977.5
1987	33.6	21.6	8.1	174.3	201.9	90.4	1.1	135.0	33.4	2.1	5.5	200.8	7.4	13.0	10.1	978.6
1988[1]	34.0	26.2	9.0	198.3	221.5	92.7	1.3	138.2	37.0	.8	5.8	219.7	7.6	13.5	12.0	1,056.1

[1] Preliminary. *Source: Foreign Agricultural Service, U.S.D.A.* T.678

TEA

Salient Statistics of Tea in the United States In Thousands of Metric Tons

	U.S. Imports from:													Sales by U.S. Retail Stores				
Year	Brazil	Argentina	Sri Lanka (Ceylon)	China (Mainland)	India	Indonesia	Japan	Kenya[2]	Mozambique	Netherlands	Malawi	Taiwan	Total	Tea Bags	Loose Tea	Instant Tea	Instant Mixes	Total Quantity
1975		1.8	18.3	2.0	6.8	12.9	1.7	8.4	2.7	2.4	2.2	4.0	72.3	31.6	4.1	19.8	8.0	63.5
1976		2.1	21.1	3.0	8.0	11.6	3.2	10.7	2.0	1.3	4.1	4.8	82.2	33.8	4.2	19.6	8.5	66.2
1977		4.9	16.6	4.2	12.3	14.7	3.4	9.5	2.3	3.0	5.6	5.7	92.1	36.2	5.2	20.0	10.7	72.1
1978	2.0	6.7	14.0	2.9	1.7	10.7	3.2	8.2	1.4	4.1	4.2	3.0	68.8	35.5	4.4	18.7	11.7	70.3
1979	3.5	7.0	14.7	6.5	5.9	11.2	2.9	9.4	2.4	4.7	2.5	2.3	79.2	36.1	4.1	18.0	11.7	69.9
1980	2.8	10.3	12.2	8.0	4.2	13.9	2.5	6.8	5.0	5.9	2.1	3.1	83.8	37.9	3.7	17.1	12.1	70.8
1981	3.5	10.0	13.0	7.1	4.7	14.7	2.5	5.5	4.2	7.7	2.4	4.2	86.3	39.7	3.3	15.9	12.0	70.8
1982	3.5	12.2	12.4	6.9	2.9	14.0	2.4	6.9	4.0	6.1	1.4	3.8	82.8	40.6	3.0	14.9	11.7	70.3
1983	3.9	15.1	8.1	6.4	2.9	14.4	1.8	4.5	3.5	4.7	1.3	3.5	77.3	41.9	2.7	14.9	13.1	72.6
1984	3.6	18.1	9.4	9.6	3.8	15.5	2.1	3.9	2.2	4.8	.9	6.3	88.3	40.7	2.3	13.3	12.2	68.5
1985	4.3	15.2	9.8	10.9	2.9	12.8	2.1	4.2	.7	4.2	.9	2.2	79.2	41.0	2.1	12.7	11.4	67.1
1986	5.6	16.4	7.8	16.9	3.9	16.3	1.2	4.3	.3	4.1	1.2	1.5	90.5	40.4	1.8	12.1	10.6	64.9
1987	5.4	15.9	4.8	16.7	3.0	10.4	1.2	4.1	.2	3.3	2.0	.9	77.4	32.5	1.1	7.2	10.4	51.3
1988	4.1	13.8	5.9	23.0	3.6	14.4	1.1	6.2	.1	3.8	1.6	1.0	90.1	31.8	.9	6.5	10.6	49.9
1989[1]	4.7	17.2	5.7	19.7	3.2	12.3	.6	6.0	—	2.5	1.9	.9	90.2	30.9	.9	6.2	10.6	48.5

[1] Preliminary. *Sources: Foreign Agricultural Service, U.S.D.A.; Bureau of Census* T.675

United States Imports of Tea In Metric Tons[2]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1975	14,297	12,200	15,486	13,648	14,694	12,170	9,915	11,276	12,404	17,594	13,940	11,843	159,287
1976	11,842	12,309	15,779	15,805	13,053	13,893	14,259	15,051	19,224	15,683	16,133	18,273	181,304
1977	16,059	15,064	22,389	23,302	27,345	22,335	22,252	15,932	9,994	9,702	7,213	10,924	203,012
1978	9,023	12,791	18,648	15,450	17,523	8,286	13,141	13,788	9,390	12,502	8,877	12,332	151,751
1979	14,797	10,568	15,584	13,822	13,556	14,352	13,361	14,809	15,841	16,992	15,432	15,578	174,690
1980	18,749	17,562	17,456	18,501	15,871	16,460	14,099	11,883	11,870	14,271	12,126	15,936	184,786
1981	12,891	18,354	14,696	19,220	18,990	17,736	14,586	19,128	13,205	15,855	13,473	12,121	190,254
1982	15,055	15,464	13,787	13,176	16,518	14,309	14,286	15,598	17,425	16,207	18,222	12,567	182,613
1983	13,748	15,092	14,170	15,799	16,018	10,931	12,159	11,747	15,025	16,531	13,600	15,631	170,451
1984	15,599	15,956	20,235	18,031	17,546	12,803	22,287	12,023	14,169	20,946	12,386	12,585	194,565
1985	16,238	13,856	15,491	13,342	15,337	15,054	15,586	12,745	14,942	14,878	13,656	13,493	174.617
1986[2]	7,676	5,996	9,852	8,619	7,143	6,790	8,950	6,634	8,215	6,742	6,788	6,389	89,794
1987	6,897	6,575	8,995	6,638	7,636	5,634	5,823	6,141	5,083	7,062	5,698	5,207	77,390
1988	6,521	7,167	8,060	9,055	8,435	8,793	7,987	7,873	5,860	5,642	6,792	7,959	90,143
1989[1]	6,610	5,966	8,290	7,170	7,193	7,124	7,394	6,790	7,070	7,634	6,964	7,053	85,257
1990													

[1] Preliminary. [2] Data prior to 1986 are in thousands of pounds. *Source: Department of Commerce* T.679

London Auction Tea Prices In U.S. Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.	Average
1979	102.4	97.4	98.3	96.7	96.5	96.6	95.9	97.3	92.8	99.4	102.0	101.0	98.0
1980	102.4	105.7	102.4	100.4	104.2	106.8	100.9	102.5	95.1	92.4	101.3	98.1	101.0
1981	98.6	101.2	100.5	97.9	94.7	90.4	84.6	80.0	81.7	87.4	91.3	91.6	91.7
1982	92.0	94.2	88.5	84.7	84.8	83.3	79.9	80.8	86.7	91.4	89.8	96.1	87.7
1983	98.5	93.1	89.8	92.1	91.0	85.2	86.6	90.6	99.0	117.4	158.8	163.8	105.5
1984	194.2	169.0	166.7	160.4	161.3	144.8	130.3	133.2	154.1	164.2	155.2	147.9	156.8
1985	143.1	127.3	110.4	98.6	75.2	74.6	71.5	72.2	73.3	78.7	80.2	75.3	90.0
1986	82.1	85.7	91.5	91.3	85.9	79.7	79.8	86.5	91.6	94.1	93.6	88.6	87.5
1987	89.7	83.6	83.2	67.9	65.4	60.8	69.5	72.3	72.7	84.1	87.4	94.0	77.6
1988	96.1	88.0	87.2	83.6	77.3	75.3	66.4	67.2	74.7	82.5	87.4	89.4	81.3
1989	87.5	82.4	80.6	77.3	76.7	80.4	88.1	83.2	97.7	118.4	106.7	115.5	91.2
1990	114.7	95.9	87.3	88.8									

Source: International Tea Committee T.679a

Tin

The tin crisis, which started in 1985, was finally resolved in 1990. The crisis resulted from the default by the International Tin Council (ITC) on delivery contracts guaranteed by the London Metals Exchange (LME). The default was responsible for the eventual dissolution of the ITC and the recasting of the LME's clearing system and membership.

At a London meeting in 1990, the ITC, which existed mostly as an object of lawsuits during the late 1980s, made a final payment of $298 million to its creditors on March 30. The figure represents 40-50 percent of the total loss ascribed to the default. On July 31, a final meeting of the ITC was held. The ITC, formed in 1956, was a vestige of a simpler trade era.

In an effort to keep the price of tin high through inter-regional cooperation, the United Nations Conference on Trade and Development, (UNCTAD) created the International Tin Study Group. However, in June 1990, UNCTAD expressed concern that only five of the original 37 tin producer and consumer countries who agreed in early 1989 to join the group had formally accepted. Those acceptances accounted for 30 percent of world trade.

The tin market has a long history of price regulation, and efforts to regulate output continue through the mechanism of the Association of Tin Producing Countries (ATPC.) In September 1990, at a meeting in Bolivia, the ATPC agreed to a 6 percent cut in the global tin production quota to 95,848 tonnes from 1990's 101,967 tonnes. The ATPC consists of seven members who account for just over half of global tin production: Malaysia, Indonesia, Thailand, Bolivia, Australia, Zaire, and Nigeria.

The biggest problem for the ATPC is Brazil, the largest tin producer, which is not a member. Brazil's 1989 production was estimated at 50,000 tonnes, much of it smuggled from the illegal Bom Futuro mine, a deposit discovered by chance in 1987. As much as 30,000 tonnes of illegal production comes from this mine, which officially produced 19,000 tonnes in 1989. Much of that tin is smuggled to Bolivia, which is an ATPC member with an open quota.

The Brazilian authorities indicated an interest in controlling their output by issuing a government order declaring the mining of tin in Bom Futuro illegal. Brazil also signaled this intention by accepting a voluntary cut in 1991 tin production to 38,000 tonnes. Brazil officials indicated that they really wanted to cut production down to 34,250 tonnes.

Tin and cocoa are a strange pair to be related in world trade, but between Malaysia and Brazil it's an important coupling. Brazil is the second largest cocoa producer, and Malaysia is third. Brazil is the leading tin producer, while Malaysia is second. Until 1990, Malaysia refused to join the International Cocoa Organization (ICCO) and was seen as a major cause of the world cocoa glut. However, in 1990 Malaysia had a change of heart, as it became apparent that there was some implied linkage between cocoa and tin. With Malaysia's shift, Brazil said it would consider moving from an ATPC observer to a member during 1991.

In January-September 1990, U.S. primary tin consumption was 27,800 tonnes, compared with full-year 1989's total of 36,518. Secondary tin consumption in the nine-month period was 9,400 tonnes.

In 1989, the U.S. imported 33,988 tonnes of tin metal from more than twenty countries. For the first nine months of 1990, imports totaled 22,165 tonnes, and the main supplier was Bolivia.

Futures Market

Tin futures are traded on the London Metal Exchange and in Kuala Lumpur.

World Mine Production of Tin (Content of Ore) In Thousands of Metric Tons

Year	Australia	Bolivia[1]	Brazil	Burma	China[3]	Indonesia	Peru	Malaysia	Nigeria	Zimbabwe	South Africa	Thailand	United Kingdom	USSR	Zaire (Congo)	World Total
1987	7.7	8.1	27.4	.9	20.0	26.1	5.3	30.4	.8	1.4	1.4	15.0	4.0	16.0	2.4	173.1
1988[2]	7.0	10.6	44.1	.5	25.0	29.6	4.4	28.9	.4	1.1	1.4	14.2	3.5	16.0	2.7	200.2
1989[3]	7.8	15.9	50.2	.4	25.0	31.3	5.1	31.0	.5	1.3	1.3	14.5	3.2	16.0	2.7	216.5
1990[3]	8	15	52	1	27	27		30	1			14	3	17	2	216.0

[1] Exports. [2] Preliminary. [3] Estimate. *Source: Bureau of Mines* T.682

World Smelter Primary Production of Tin In Thousands of Metric Tons

Year	Australia	Thailand	Bolivia	Brazil	China	Zimbabwe	Netherlands	Indonesia	Japan	Malaysia	Nigeria	Portugal	South Africa	United Kingdom	United States	USSR	Total
1985	2.7	18.0	12.9	24.7	15.0	1.2	5.3	20.9	1.4	45.5	1.1	.5	2.1	7.5	3.0	16.0	193.0
1986	1.4	19.7	7.7	27.4	15.0	1.1	5.1	22.1	1.3	43.8	.1	.2	2.0	9.2	3.2	16.0	184.2
1987	.6	15.4	2.7	29.4	20.0	1.0	3.8	24.2	.9	44.4	.6	.1	1.5	12.1	3.9	18.5	189.3
1988[2]	.4	14.7	5.5	41.9	29.5	.9	3.5	28.4	.8	49.9	.6	.1	1.4	9.0	1.5	18.5	215.1
1989[2]	.4	14.6	9.7	43.5	29.5	.8	4.9	29.9	.8	50.9	.6	.1	1.3	8.0	1.0	18.0	222.4

[1] Imports into the U.S. of tin concentrates (tin content). [2] Preliminary. [3] Estimate. *Source: Bureau of Mines* T.683

TIN

Tin Foreign Trade of the United States In Metric[5] Tons

		Imports (For Consumption)														
		Concentrates[3] (Ore)			Bars, Blocks, Pigs, etc.[4] (Metal)											
Year	Exports (Metal[2])	Total All Ore	Bolivia	Peru	Total All Metal	Australia	Belgium	Bolivia	Brazil	China	Indonesia	Malaysia	Nigeria	Singapore	Thailand	United Kingdom
1977	5,480	6,724	6,667	—	47,774	—	—	3,358	2,380	381	5,294	27,084	2	207	7,780	513
1978	4,692	3,873	3,541	—	46,776	—	155	5,768	1,810	1,571	5,664	23,448	—	230	6,865	468
1979	569	4,529	3,745	—	48,355	—	100	5,387	933	185	5,429	23,448	—	1,070	10,440	550
1980	595	840	528	—	45,982	145	190	5,597	2,031	858	6,477	15,548	770	864	12,414	416
1981	2,361	232	—	232	45,874	552	—	8,277	1,129	2,032	7,096	13,163	520	656	11,967	46
1982	5,769	1,961	192	1,416	27,939	334	10	4,340	2,409	2,632	5,744	2,364	124	600	9,116	55
1983	1,340	969	257	341	34,048	390	45	5,739	5,604	1,938	6,004	4,704	265	1,029	7,436	18
1984	1,429	3,272	271	2,502	41,224	288	137	5,438	10,220	1,640	4,985	6,622	60	781	9,531	583
1985	1,478	1,616	22	1,506	33,830	266	—	1,815	11,021	4,513	4,586	379	—	1,886	6,373	48
1986	1,547	3,936	259	3,676	35,768	94	—	4,893	9,456	2,955	4,149	6,230	—	691	1,901	730
1987	1,318	2,953	732	2,165	41,150	1,406	302	3,476	13,089	8,044	4,001	4,959	79	743	1,460	467
1988[1]	1,209	2,837	923	1,914	43,493	1,342		3,926	16,213	6,223	5,334	5,317	41	1,342	670	1,354
1989[5]	904	216	—	149	33,988	1,420		4,795	10,572	4,793	5,162	2,392	—	456	180	391
1990[5]	900	—			34,000	1,700		8,500	8,000	4,100	4,800	4,000		150	100	300

[1] Preliminary. [2] Ingots, Pigs & Bars. Excludes re-exports from 1979. [3] Tin content. [4] Also grain, or granulated. [5] Estimate.
Source: Department of Commerce

T.684

United States Tin (Pig) Consumption (Total) In Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1977	5,600	5,500	6,800	5,800	5,800	6,000	5,200	5,800	5,900	5,400	5,000	5,100	60,732
1978	5,400	5,000	5,500	5,200	5,700	5,400	4,600	5,200	5,200	5,300	5,400	4,900	61,531
1979	5,400	5,500	6,400	5,400	5,400	5,300	4,900	4,900	5,000	5,500	5,000	4,600	62,465
1980	5,500	5,300	5,750	5,300	4,600	4,100	3,700	3,900	4,150	4,300	4,050	3,750	56,362
1981	4,300	4,400	4,100	4,600	4,400	4,350	3,900	4,200	3,950	3,900	3,400	2,950	54,373
1982	3,400	3,300	3,750	5,100	5,000	5,100	4,900	4,700	4,700	4,600	4,500	4,400	53,450
1983	4,400	4,700	4,900	4,700	4,700	4,800	4,300	4,600	4,700	4,800	4,400	4,800	55,800
1984	4,600	4,300	5,300	3,900	4,500	4,400	4,100	4,400	4,100	4,000	3,300	3,500	50,400
1985	4,000	3,900	4,600	4,500	4,600	4,400	4,200	4,400	4,300	4,500	4,200	4,000	51,600
1986	4,300	4,000	4,200	4,500	4,400	4,400	4,100	4,100	4,000	4,300	3,900	3,900	50,100
1987	4,100	3,900	4,200	4,700	4,300	4,200	4,400	4,400	4,400	4,300	4,600	4,400	44,219
1988	4,600	4,700	4,800	4,700	5,300	5,600	5,300	5,300	5,500	5,600	4,900	4,900	45,073
1989[1]	4,800	4,700	4,300	4,500	4,500	4,100	4,000	4,200	4,100	4,300	4,000	3,300	51,600
1990[1]	4,000	4,000	4,200	4,100	4,200	4,100	4,100	4,300	4,100	4,100			

[1] Preliminary. *Source: Bureau of Mines.*

T.681

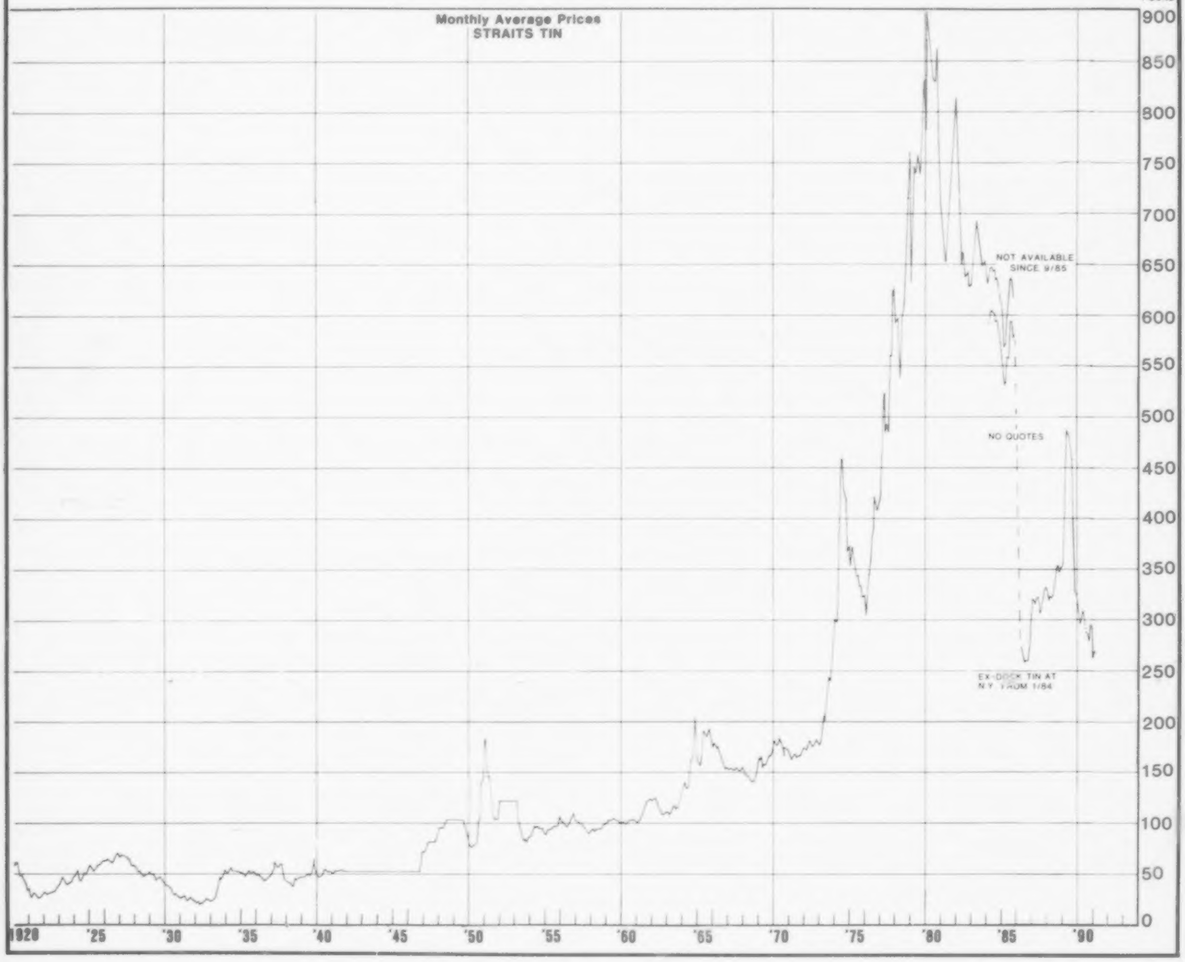
United States Tin Stocks (Pig—Industrial) In Metric Tons

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1977	7,282	8,032	7,883	5,874	6,157	5,644	4,720	6,305	5,557	5,378	9,124	7,272
1978	8,441	7,626	6,628	6,291	7,785	8,139	7,846	7,817	7,260	5,774	4,975	5,666
1979	5,040	4,594	4,254	5,891	6,097	5,938	6,317	6,270	6,096	5,058	4,901	4,244
1980	4,238	7,720	6,882	7,527	5,443	7,263	6,592	6,544	6,051	5,180	5,208	5,086
1981	5,504	5,968	5,745	5,229	5,725	5,978	6,227	6,465	5,663	5,710	5,325	5,563
1982	5,988	3,872	3,490	3,829	5,222	4,953	4,653	3,888	2,910	2,940	2,970	3,437
1983	3,152	4,609	3,513	3,815	4,026	3,527	3,634	3,931	4,091	3,604	3,074	3,180
1984	3,020	2,968	2,268	2,840	2,646	3,119	2,795	2,688	2,837	2,495	2,512	2,326
1985	2,592	2,766	2,283	2,407	2,228	2,853	3,042	2,762	2,663	2,985	4,121	4,913
1986	5,665	5,310	4,692	3,097	4,127	3,987	4,032	4,166	4,246	3,497	3,554	4,681
1987	4,802	5,232	6,394	6,321	7,263	8,087	6,663	4,288	5,373	5,533	6,402	5,460
1988	4,428	4,490	5,989	5,631	5,868	6,128	6,456	5,665	4,350	4,171	4,371	4,781
1989[1]	4,943	4,242	3,894	4,320	3,717	4,945	4,912	5,597	5,872	6,241	5,313	5,530
1990[1]	6,072	5,975	5,824	6,401	4,959	3,298	3,792	3,592	3,836	3,449	4,772	

[1] Preliminary. *Source: Bureau of Mines*

T.680

TIN CASH PRICE NEW YORK



Average Price of Ex–Dock Tin in New York[1] In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1978	591.19	595.93	557.48	537.85	570.58	600.95	606.21	641.80	679.66	739.69	758.84	695.86	631.34
1979	684.56	724.57	746.14	740.06	745.18	760.14	712.31	739.93	762.03	785.54	801.23	830.88	756.87
1980	836.46	866.39	900.23	872.21	861.84	845.19	836.95	834.61	861.92	832.92	788.67	751.36	840.73
1981	739.94	705.76	691.70	677.38	652.07	652.77	680.22	746.06	777.36	798.70	813.00	801.59	728.05
1982	787.41	749.93	669.51	649.58	662.35	643.00	638.00	636.33	644.33	627.94	627.93	630.18	663.88
1983	648.90	653.89	669.18	692.29	683.36	670.54	663.13	653.10	649.31	650.65	653.02	636.71	660.34
1984[1]	590.60	592.10	603.40	605.10	601.70	602.20	593.50	594.70	590.20	578.60	574.40	566.10	591.05
1985	542.10	532.00	533.80	559.10	557.70	576.30	594.90	593.80	578.60	580.50	N.Q.	N.Q.	564.88
1986	N.Q.	N.Q.	350.64	274.98	265.04	260.28	261.51	261.26	260.69	267.48	292.84	308.26	280.30
1987	321.56	320.39	317.66	320.98	323.60	316.96	307.59	314.63	321.86	324.81	332.21	327.65	320.83
1988	326.68	321.12	324.79	323.85	325.28	337.37	342.18	351.14	355.20	347.84	351.10	352.42	338.25
1989	355.80	377.77	419.64	486.72	484.42	474.15	458.64	415.80	395.99	379.67	329.10	324.79	408.54
1990	317.89	296.28	302.41	308.97	307.02	295.86	288.09	287.48	279.20	296.11	292.27	261.82	295.41
1991	269.97	268.00											

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[1] Data prior to 1984 are for Straits (Alloyer Price). *Source: American Metal Market*

T.685

Secondary Tin Recovered in the United States In Metric Tons

Year	Tin Content of Tinplate Produced				Tin Recovered by Form of Recovery								
	Tinplate Waste (Gross Weight)	Tinplate (all forms) (Gross Weight)	Tin Content (Tonne)	Tin per tonne of plate (Kilograms)	Tin Metal	Bronze & Brass	Solder	Type Metal	Babbitt	Anti-Monial Lead	Chemical Compounds	Misc.[3]	Grand Total
1978					1,565	12,419	4,363	1,038	521	712	463	19	21,100
1979					1,767	12,090	5,282	584	441	867	433	29	21,493
1980					1,703	10,402	4,423	525	378	856	321	30	18,638
1981					1,587	8,894	3,035	576	261	791	265	29	15,438
1982	208,074	2,712,678	10,936	4.0	1,067	6,971	2,723	222	237	1,015	447	101	12,783
1983	166,186	2,586,810	9,328	3.6	1,180	8,517	3,072	172	185	803	182	94	14,205
1984	151,540	2,409,399	8,659	3.6	1,107	9,146	3,653	142	123	894	301	51	15,417
1985	146,041	2,215,042	9,321	4.2	1,302	8,045	3,565	122	88	791	186	10	14,109
1986	120,186	2,068,246	8,660	4.2	1,134	7,996	3,676	197	66	891	N.A.	17	13,977
1987	141,842	2,302,173	10,357	4.5	1,353	10,245	3,765	66	77	623	N.A.	30	16,159
1988[1]	149,054	2,375,809	11,582	4.9	578	9,939	3,619	70	112	902	N.A.	29	15,249
1989[1]	153,542	2,263,769	11,764	5.2	569	10,305	3,225	46	116	952			15,213

[1] Preliminary. [2] Tin content. [3] Includes foil, cable lead & terne metal. *Source: Bureau of Mines*

T.687

U.S. Consumption of Primary and Secondary Tin In Metric Tons

Year	Net Import Reliance as a % of Apparent Consumption	Industry Stocks Jan. 1[2]	Net Receipts				Available Supply	Stocks Dec. 31 (Total Available Less Total Processed)	Total Processed	Consumed in Mfg. Pdt's.
			Primary	Secondary	Scrap	Total				
1978	79	16,858	46,821	2,541	10,499	59,861	76,719		63,135	61,531
1979	80	13,584	50,126	2,636	10,659	63,421	77,005		64,067	62,465
1980	79	7,075	43,545	2,461	7,709	53,715	60,790	3,593	57,197	56,362
1981	77	8,835	41,162	5,692	8,050	54,904	63,739	8,640	55,099	54,373
1982	68	8,717	35,843	6,507	7,830	50,180	58,897	12,328	46,569	46,295
1983	73	7,549	36,494	5,412	7,435	49,341	56,890	11,098	45,792	45,547
1984	74	8,063	38,813	6,110	6,791	51,714	59,777	11,145	48,632	48,315
1985	72	8,430	38,006	8,904	7,471	54,381	62,811	13,928	48,883	48,669
1986	74	9,336	35,475	11,636	6,346	53,457	62,793	18,915	43,878	43,524
1987	74	9,876	38,441	11,707	6,635	56,743	66,619	21,888	44,731	44,219
1988	78	10,217	39,421	12,472	6,707	58,600	68,817	23,586	46,231	45,601
1989[1]	77	9,242	37,670	10,901	8,168	56,739	65,981	19,186	46,795	46,371
1990[3]	76									

[1] Preliminary. [2] Includes tin in transit in the U.S. [3] Estimate. *Source: Bureau of Mines*

T.686

Consumption of Tin in the United States by Finished Products In Metric Tons of Contained Tin

Year	Alloys	Tinplate[2]	Solder	Babbitt	Bronze & Brass	Collap. Tubes & Foil	Tinning	Chemicals[3]	Tin Powder	Type Metal	Bar Tin & Anodes	White Metal	Other	Total	
														Primary	Secondary
1978		17,280	17,770	2,346	9,048	673	2,431	4,557	1,360	171	424	1,484		48,403	13,128
1979	2,428	17,929	18,022	2,243	8,690	686	2,584	4,797	1,435	140	567	1,258	1,686	49,496	12,969
1980	134	16,346	15,618	2,380	7,478	526	2,577	N.A.	1,109	N.A.	486	914	8,794	44,342	12,020
1981	2,435	13,306	15,799	3,844	7,041	561	2,491	4,417	983	52	455	1,201	1,788	40,229	14,144
1982	N.A.	11,134	13,142	1,915	4,400	N.A.	1,887	N.A.	906	N.A.	509	1,177	11,225	33,019	13,276
1983	N.A.	9,462	14,120	2,881	4,583	N.A.	1,759	N.A.	793	N.A.	654	937	10,358	34,301	11,246
1984	N.A.	8,825	17,249	2,684	4,998	N.A.	1,748	N.A.	1,057	N.A.	526	958	11,396	37,201	11,114
1985	N.A.	9,321	18,621	1,488	4,330	N.A.	1,511	N.A.	976	7	466	937	12,110	36,524	12,145
1986	N.A.	8,660	15,810	1,324	3,502	N.A.	1,437	N.A.	1,002	N.A.	449	1,134	10,204	33,324	10,198
1987	N.A.	10,357	15,240	1,060	3,559	N.A.	1,398	N.A.	N.A.	N.A.	703	1,175	10,704	35,597	8,599
1988[1]	N.A.	11,064	15,288	916	3,934	N.A.	1,406	N.A.	N.A.	N.A.	557	1,131	10,777	37,529	8,072
1989[4]	N.A.	11,764	16,370	794	3,693	N.A.	1,509		711		619	1,074	9,837	36,518	9,853
1990[4]		12,500	13,000	600	3,500		1,400				500	1,000		36,900	12,400

[1] Preliminary. [2] Includes small quantity of secondary pig tin & tin acquired in chemicals. [3] Including tin oxide. [4] Estimate.
Source: Bureau of Mines

T.688

Titanium

Titanium is mostly used as a metal in aircraft, where its light weight and high strength give it a great many uses. Titanium oxide is a pigment used in paints, and there are no adequate substitutes for it.

In 1990, companies started operations to process titanium from heavy sand deposits located in southern Virgina and eastern North Carolina. Two international mining consortiums began to exploit titanium-bearing mineral sand and zircon deposits along shorelines in eastern North Carolina.

Domestic production of titanium sponge for the first six months of 1990 totaled 13,322 tons, compared with full-year 1989's production of 25,225 tons. Six-month production of ingot was 18,731 tons, compared with 1989's full-year output of 41,306 tons. Output of mill products totaled 13,801 tons in the first six months, versus all of 1989's 28,946 tons.

U.S. titanium sponge consumption in January to June 1990 amounted to 12,799 tons, which compared with 1989's full-year use of 24,927 tons. Year-to-date scrap consumption was 8,059 tons, versus 1989's full-year 17,956 tons. Ingot scrap totaled 18,707 tons in the first six months of 1990, compared with 31,396 tons for all of 1989. Mill products consumption was 12,756 tons in the first half of 1990, while full-year 1989's usage was 24,997 tons.

Total industry stocks of titanium in mid-1990 amounted to 15,358 tons, above 13,697 at the en of 1989. Strong demand over the two previous years had kept stocks relatively low. Government stocks at the end of 1989 totaled 33,413 tons, and during the first six months of 1990 they showed no change.

According to a titanium industry publication, 1990 was the 200th anniversary of the discovery of titanium by Reverend William Gregor of England. He extracted the oxide from black magnetic sand near Falmouth, Cornwall. Several years later, German scientist Heinrich Klaproth confirmed the discovery and named the metal.

Average Titanium Prices in the United States

							Dec. 31 in $ per pound		
Year	Ilmenite— F.O.B. Australian Ports[2] $ Tonne	Slag, 85% T_iO_2 F.O.B. Richards Bay, South Africa $ Tonne	Ilmenite Large Lots Bulk, F.O.B. U.S. East Coast $ Tonne	Rutile Large Lots Bulk, F.O.B. U.S. East Coast[3] $ Tonne[5]	Rutile Bagged F.O.B. Australian Ports $ Tonne[5]	Synthetic F.O.B. Mobile, Ala. $ per Short Ton	Titanium Metal Sponge	Titanium Dioxide Pigments Anatase	Titanium Dioxide Rutile
1979	50		—	390			3.98	0.530	0.590
1980	55		—	440		310	7.02	0.570	0.630
1981	70–75		39	450–475		340	7.65	0.690	0.750
1982	70–75	170–180	44–45	450–475		350	5.55	0.690	0.750
1983	70–75	187–198	44–45	400–430		350	5.55	0.690	0.750
1984	36–38	200	44–45	320–340	319–335	350	5.55	0.690	0.750
1985	38–42	212	50–56	350–360	315–328	350	3.50–4.00	.72–.73	0.780
1986	47–53	225–230	50–56	355–375	374–386	350	3.90–4.30	.75–.77	.80–.82
1987	46–52	235–245	50–56	355–375	372–392	350	4.00–4.20	.75–.77	.80–.82
1988[1]	64–77	250–275	N.A.	N.A.	547–572	N.A.	4.25–4.75	.92–.95	.95–.97
1989[4]	67–75	275–300		540–550	553–632		4.80–5.30	1.01–1.02	1.04–1.05
1990[4]	79	298			715		4.50		1.01

[1] Preliminary. [2] Prior to 1984 prices are for T_iO_2 F.O.B. Atlantic Seabord. [3] Prior to 1984 prices are for F.O.B. Eastern Ports. [4] Estimate. [5] Prices prior to 1988 are per short ton. *Source: U.S. Bureau of Mines* T.690

Salient Statistics of Titanium[4] in the United States In Short Tons

	Ilmenite				Titanium Slag			Rutile		Exports of Titanium Products			
Year	Production (Gross Wt.)	Shipments (TiO_2)	Imports[3]	Stocks Dec. 31 (TiO_2)	Consumption (TiO_2)	Imports[3]	Stocks (TiO_2)	Imports[3, 4]	Stocks Dec. 31 (TiO_2)	Ores & Concentrates	Scrap	Dioxide & Pigments	Ingots, Billets, Etc.
1979	639,292	389,535	184,478	462,415	106,346	111,210	56,917	283,479	119,947	9,903	4,967	51,456	1,984
1980	556,646	358,181	357,488	584,280	133,933	194,994	127,981	281,605	147,670	17,830	3,300	45,795	3,278
1981	542,357	310,854	236,217	543,114	186,020	268,825	150,706	202,373	153,770	7,297	3,280	62,432	4,203
1982	263,391	145,725	348,366	470.776	168,433	247,845	103,667	163,325	165,762	21,682	4,287	72,823	2,196
1983	N.A.	N.A.	259,328	254,237	127,267	138,708	61,026	111,578	122,189	4,391	5,379	91,702	1,371
1984	N.A.	N.A.	409,605	128,507	152,534	209,839	52,397	180,508	96,186	8,651	4,109	106,124	2,071
1985	N.A.	N.A.	506,804	147,357	199,610	291,828	83,821	179,663	109,319	27,759	6,760	101,954	2,248
1986	N.A.	N.A.	465,617	169,723	221,959	361,872	65,213	174,820	107,491	5,314	6,403	112,227	2,119
1987			338,977	132,295	223,425	450,608	106,918	218,188	110,217	4,435	5,603	120,029	2,719
1988[1]			434,498	108,878	267,414	479,110	116,216	254,770	119,424	10,326	6,602	130,538	2,296
1989[2]			453,927	151,676	369,711	425,598	86,090	291,999	159,392	21,826	6,063	233,908	
1990[2]			460,000	155,000				300,000	160,000			225,000	

[1] Preliminary. [2] Estimate. [3] For consumption. [4] Natural & synthetic. *Source: Bureau of Mines* T.693

World Production of Titanium Ilmenite Concentrates[2] In Thousands of Metric Tons[7]

Year	Australia[6]	Brazil	Canada[2]	China	Finland	India	Sierra Leone	Malaysia (Exports)	Norway	South Africa[3]	Sri Lanka (Ceylon)	Thai- land	United States[4]	USSR	World Total[2 & 3]
1979	1,327	14.5	525.8	N.A.	131.9	161.9		220.3	903.7	316.0	61.0		639.3	450.0	4,752
1980	1,553	18.6	934.4	N.A.	175.3	185.1		208.3	912.5	379.0	37.4		556.6	460.0	5,420
1981	1,478	17.5	836.9	150.0	178.0	179.1		190.4	727.1	408.0	88.2		542.4	470.0	5,266
1982	1,289	12.5	737.4	150.0	185.0	168.6		111.6	608.2	420.0	75.3		263.4	475.0	4,496
1983	1,003	33.6	700.0	154.0	180.7	148.2		245.5	612.8	460.0	90.1		N.A.	480.0	4,108
1984	1,681	45.1	800.0	154.0	184.0	154.3		296.0	718.5	460.0	112.5		N.A.	485.0	5,091
1985[7]	1,433	76.4	845.0	140.0	53.0	143.0	—	314.7	735.8	435.0	114.9	1.0	N.A.	445.0	4,737
1986	1,252	75.5	850.0	140.0	—	140.0	—	414.9	803.6	435.0	129.9	13.5	N.A.	450.0	4,705
1987	1,509	111.6	925.0	140.0	—	140.0	5.6	509.2	852.3	650.0	128.5	27.1	N.A.	455.0	5,454
1988[1]	1,622	134.6	1,025	150.0	—	140.0	42.1	486.3	875.0	700.0	74.3	18.3		460.0	4,175
1989[1]	1,776	135.0	1,040	150.0	—	160.0	62.3	497.0	880.0	725.0	75.0	17.8		460.0	5,978
1990[8]	1,850	135	1,100	150		160	64	495	890	730	75			460	6,000

[1] Preliminary. [2] Includes Ti slag containing approx. 70% TiO_2. [3] Contains 85% of TiO_2. [4] Includes a mixed product containing ilmenite, leucoxene, & rutile. [5] Includes slag & concentrate. [6] Includes leucoxene. [7] Data prior to 1985 are in thousands of short tons. [8] Estimate. *Source: Bureau of Mines*

T.692

World Production of Titanium Rutile Concentrates In Metric Tons[3]

Year	South Africa	Australia	USSR	Brazil	Sierra Leone	India	Sri Lanka (Ceylon)	Thail- and	World Total
1979	46,000	302,620	11,000	484	8,267	5,445	16,176		389,992
1980	53,000	343,639	11,000	472	52,356	5,908	14,097		480,472
1981	55,000	254,432	11,000	190	55,992	7,397	14,662		398,673
1982	52,000	243,277	11,000	258	52,590	6,374	7,950		373,449
1983	62,000	180,089	11,000	510	79,146	6,100	8,921		347,766
1984	62,000	187,860	11,000	454	100,641	6,600	7,129		375,684
1985[3]	55,000	211,615	10,000	713	80,611	6,800	8,558	110	373,407
1986	55,000	215,774	10,000	495	97,100	7,000	8,443	48	393,860
1987	55,000	246,263	10,000	511	113,300	7,000	7,200	92	439,366
1988[1]	55,000	230,637	10,000	1,142	126,358	5,000	5,255	128	433,520
1989[2]	60,000	266,000	10,000	1,000	128,340	5,000	5,200	150	475,690
1990[2]	70,000	285,000		1,000	125,000	6,000	6,000		500,000

[1] Preliminary. [2] Estimate. [3] Data prior to 1985 are short tons. *Source: Bureau of Mines*

T.691

World Production of Titanium Sponge Metal & U.S. Consumption of Titanium Concentrates

	Production of Titanium (in short tons[4] Sponge Metal[1]						U.S. Consumption of Titanium Concentrates, by Products (in short tons) Ilmenite (TIO_2 Content)			Rutile (TIO_2 Content)			
Year	China	USSR	United Kingdom	Japan	United States	Total	Pig- ments	Misc.	Total	Welding Rod Coatings	Pig- ments	Misc.	Total
1979		43,000	2,600	14,000	N.A.	—	475,342	11,886	478,228	9,947	230,776	52,189	292,912
1980		45,000	2,600	21,257	N.A.	—	502,108	11,207	513,315	6,876	211,599	59,407	277,882
1981	2,000	42,000	2,600	27,500	26,419	100,519	501,301	9,721	511,022	6,944	192,779	66,873	266,596
1982	1,500	44,000	2,600	18,600	15,600	82,300	345,618	6,775	352,393	5,275	184,403	35,435	225,113
1983	2,000	45,000	2,000	11,600	13,966	74,000	468,279	6,006	474,285	3,649	210,949	35,820	250,418
1984	2,000	46,000	2,500	16,938	24,326	92,000	492,658	6,319	498,977	3,911	231,808	62,920	298,639
1985	2,000	47,000	1,500	16,938	23,257	91,000	474,561	6,450	481,011	4,881	239,893	41,714	286,488
1986	2,000	48,000	1,500	18,000	17,500	87,000	511,070	1,655	512,725	7,667	244,178	57,539	309,384
1987	2,000	49,000	1,500	11,105	19,675	83,000	508,632	1,817	510,449	4,168	271,658	56,558	332,384
1988[3]	2,000	46,000	1,500	16,500	24,000	88,000	429,147	590	429,736	3,737	262,998	64,641	331,376
1989[2]	2,000	46,000	1,500	21,000	25,225	95,725	419,743	414	419,743	3,603	271,208	71,178	345,989
1990[2]	2,000	47,000	1,500	26,000	25,500	102,000							

[1] Unconsolidated metal in various forms. [2] Estimated. [3] Preliminary. [4] Data is in *metric tons* for 1989 & 1990. [5] Data is in *metric tons* for 1988 & 1989. *Source: Bureau of Mines*

T.689

Tobacco

U.S. tobacco production in 1990 was forecast to rise by 16 percent to 1.6 billion pounds, according to USDA. Harvested acreage increased by 7 percent to just over 727,000. The average yield was 2,198 pounds per acre, 9 percent above 1989. The top producing state was North Carolina with a crop of 631 million pounds, followed by Kentucky and South Carolina. The major types of tobacco grown were flue-cured and burley.

U.S. cigarette consumption in 1990 declined for the sixth year in a row and for the seventh out of eight years. Consumption in 1990 was expected to be 524 billion pieces, down 3 percent. The drop in use was related to higher prices (due to increased manufacturing costs and higher excise taxes), restrictions on smoking, and declining social acceptance. Per capita consumption by those 18 years and older was 2,812 cigarettes, versus 2,926 the previous year, and was the lowest since 1942.

Exports of cigarettes continued to grow, and in Jan.-Jun. 1990 were 73.7 billion pieces, almost 14 percent above first-half 1989. Leading importers were Belgium-Luxembourg, Japan and Hong Kong. The export outlook remained bright, because of rising foreign incomes, a preference for U.S.-made cigarettes, and political liberalization in Eastern Europe and the USSR. Exports were likely to grow rapidly, offsetting the decline in domestic use.

Retail prices of tobacco products were about 11 percent higher in July 1990 than a year earlier. Wholesale cigarette prices rose in December 1989 and in May and November 1990. Sales of generic and value-priced cigarettes, which are cheaper than standard brands, increased.

In 1990, nine states raised cigarette taxes an average of eight cents a pack. State taxes ranged from 2 cents a pack in North Carolina to 41 cents in Texas. Sixteen states have excise taxes of 30 cents a pack or more. The combined city, county and state taxes in Chicago were 56 cents. The federal excise tax, which had been 16 cents a pack since 1983, was to increase to 20 cents in January 1991. Federal excise taxes on cigars, chewing tobacco, and pipe tobacco were also raised by 25 percent.

The average number of cigars and cigarillos smoked by males 18 years and over was forecast to be just above 27, down 5 percent from 1989. Output of little cigars in 1990 was due to decline by about 5 percent. Use of chewing tobacco was also expected to fall in 1990, as higher prices and publicity against smokeless tobacco reduced its use. Legislation requires rotating warning labels on packages, an advertising ban for radio and television, and a federal excise tax. Snuff consumption appeared to be on the rise, possibly due to restrictions on smoking.

U.S. flue-cured tobacco production, used mostly for cigarettes, was 892 million pounds in 1990. Increased domestic use of flue-cured leaf resulted from the substitution of U.S. leaf for foreign flue-cured. Exports of flue-cured tobacco have risen, following recent declines, and the major buyers are Japan, the Netherlands, Denmark, Hong Kong, and Taiwan.

The burley tobacco crop was 587 million pounds, 22 percent more than in 1989. Harvested acreage was up almost 8 percent. Burley tobacco is used mostly for cigarettes, and about a fourth of the crop is exported. Domestic use of burley rose by about 5 percent to 435 million pounds. Exports were projected to be 165 million pounds, up slightly. Among the countries buying more burley were Italy, the Netherlands, Switzerland, and Thailand.

World tobacco production in 1990 was put at 6.18 million tonnes, down 2 percent. The major producer was China, with a crop of 2.45 million tonnes. Global exports were estimated at 1.44 million tonnes, 3 percent more than a year earlier. The U.S. was the largest exporter, followed by Brazil, Italy, Greece, Zimbabwe, and Turkey. The U.S. is also the leading importer of tobacco. Other large buyers are Germany, the UK, the Netherlands, the USSR and Japan. World use of tobacco was expected to be about the same as a year earlier.

U.S. Government Program

The 1990 national average loan level for flue-cured tobacco was 148.8 cents per pound, 2 cents more than in 1989. The national acreage allotment was 420,354 acres, and the national marketing quota was 877.7 million pounds.

World Production of Leaf Tobacco In Thousands of Metric Tons (Farm Sales–Weight[3])

Year	United States	Brazil	Canada	China	USSR	France	Greece	India	Indonesia	Italy	Japan	Pakistan	Philippines	Turkey	Zimbabwe	World Total[1]
1983	648.2	378.0	111.7	1,381	385.0	44.5	111.7	590.6	126.0	156.0	136.7	64.6	91.7	234.0	99.0	6,044
1984	783.8	392.0	91.3	1,789	381.7	35.9	140.3	492.5	121.4	160.3	135.5	79.1	109.4	177.5	124.9	6,501
1985	686.9	411.0	85.9	3,425	381.0	34.9	148.5	472.8	172.5	166.5	116.2	87.4	75.9	170.5	108.7	6,993
1986	528.0	385.0	70.1	1,707	321.0	38.6	148.8	439.4	154.1	145.5	118.2	78.3	72.8	161.5	117.0	6,005
1987	539.3	410.0	61.4	1,945	296.0	33.9	144.0	460.2	154.0	162.1	104.4	69.2	79.4	184.7	131.5	6,156
1988	621.2	419.0	69.8	2,732	242.0	29.4	134.8	367.4	137.8	184.4	85.8	69.5	68.8	218.8	123.7	6,848
1989[2]	620.2	462.0	75.0	2,777	233.2	29.2	125.7	491.4	150.1	197.3	74.4	74.0	73.3	268.1	133.8	7,108
1990[1]	714.8	435.0	65.0	2,692	225.0	26.2	131.8	490.0	158.1	205.0	74.4	70.4	71.2	252.1	138.9	7,056

[1] Estimated. [2] Preliminary. [3] Farm Sales–weight is about 10% above dry weight which is normally reported in trade statistics.

Source: Foreign Agricultural Service, U.S.D.A.

T.694

TOBACCO

Production and Consumption of Tobacco Products in the United States

Year	Production								Consumption[3] Per Capita[4]						
	Chewing Tobacco														
	Plug	Twist	Loose-leaf	Total	Cigarettes	Cigars[2]	Smoking Tobacco	Snuff	Cigars[2]	Cigarettes	Cigars[2]	Cigarettes	Smoking Tobacco	Chewing Tobacco	Total Pdt.'s
	Million Pounds				Billion		Million Lbs.		Number		Pounds				
1982	15.7	1.7	73.0	90.4	694.2	3.17	28.3	43.8	45.2	3,739	.74	6.45	.42	1.09	7.46
1983	14.1	1.7	71.0	86.8	667.0	3.14	28.0	46.7	43.8	3,488	.72	6.19	.40	1.05	7.19
1984	12.7	1.7	74.4	88.8	668.8	3.13	24.5	49.4	41.9	3,446	.69	5.89	.35	1.05	6.85
1985	11.3	1.5	74.0	86.8	665.3	2.83	22.1	48.7	37.9	3,370	.62	5.90	.32	1.01	6.81
1986	10.4	1.4	69.6	81.4	658.0	2.93	19.4	47.5	35.8	3,274	.59	5.72	.29	.93	6.56
1987	9.9	1.4	67.3	78.7	689.4	2.13	18.0	46.2	31.7	3,197	.52	5.50	.27	.89	6.30
1988	8.9	1.4	65.6	75.9	694.5	1.98	17.8	48.6	29.1	3,096	.47	5.38	.25	.86	6.14
1989[1]	8.3	1.3	64.9	74.5	677.2	1.97	17.0	49.7	28.6	2,888	.47	5.03	.22	.82	5.77
1990[5]	7.4	1.3	63.5	72.2	700.0	1.85	16.6	52.5	28.0	2,800	.46	4.96	.21	.80	5.70

[1] Preliminary. [2] Large cigars & cigarillos. [3] Consumption of tax-paid tobacco products; Represents unstemmed equivalent of tobacco used in the manufacture of these products. [4] 18 years old & over. [5] Estimate.
Sources: Bureau of the Census; Internal Revenue Service T.695

Production of Tobacco in the United States In Millions of Pounds

Year	Conn.	Florida	Georgia	Indiana	Kentucky	Maryland	Massachusetts	North Car.	Ohio	Pa.	South Car.	Tenn.	Virginia	Wisconsin	W. Virg.
1982	4.2	21.0	105.6	20.2	589.4	37.5	.9	700.7	31.9	25.9	124.2	178.2	125.4	20.1	3.6
1983	3.4	17.6	96.4	13.0	324.6	29.7	.8	546.9	17.7	22.0	112.9	118.2	99.1	16.7	3.8
1984	2.8	17.9	85.5	18.8	530.1	30.4	.8	590.0	26.5	22.4	105.5	154.6	115.9	16.4	4.5
1985	3.3	16.3	82.1	14.6	428.4	26.6	.8	556.5	16.9	21.9	98.9	127.4	91.1	18.0	3.4
1986	3.1	13.3	67.9	12.1	314.9	21.1	.6	444.8	13.6	21.8	75.5	82.8	73.5	11.9	2.6
1987	2.8	13.8	72.2	11.1	304.8	13.3	.7	466.6	12.0	18.8	94.1	87.3	76.9	8.4	2.6
1988	3.0	17.2	85.9	10.9	355.0	12.0	.8	552.6	14.5	18.2	100.1	93.1	92.2	6.9	2.7
1989	2.8	17.8	87.2	13.2	366.6	8.1	.7	541.1	15.9	17.9	103.7	79.8	93.8	11.4	1.9
1990[1]	3.0	18.9	100.4	13.4	442.4	9.0	.7	631.0	17.7	19.4	109.7	102.5	108.9	13.2	2.9

[1] Preliminary, December estimate. *Source: Crop Reporting Board, U.S.D.A.* T.696

Salient Statistics of Tobacco in the United States

Year	Acres Harvested 1,000 Acres	Yield Per Acre Lbs.	Production Million Lbs.	Farm Price ¢ Lb.	Farm Value Mil. $	Tobacco (July–June)		U.S. Exports of				Stocks of Leaf Tobacco[4] All Types			
						Exports[2]	Imports[3]	Cigarettes	Cigars & Cheroots	Chewing Tobacco & Snuff	Smoking Tobacco[5]	Jan. 1	April 1	July 1	Oct. 1
						Mil. Lbs.		Millions		Metric Tons		Billion Pounds			
1982	912.7	2,185	1,994	176.4	3,517	553.4	434.0	73,585	181	887	9,105	5,080	4,909	4,675	5,034
1983	789.2	1,811	1,429	174.6	2,495	526.5	515.9	60,698	130	1,073	10,345	5,367	5,288	4,900	5,209
1984	791.7	2,183	1,728	180.6	3,121	519.8	425.1	56,517	104	1,162	15,036	5,357	5,210	4,987	5,186
1985	688.0	2,196	1,511	164.5	2,486	541.6	449.1	58,967	59	525	19,156	5,434	5,247	4,997	5,150
1986	581.9	1,998	1,163	152.2	1,771	533.6	487.1	63,945	62	616	41,823	5,293	5,158	4,848	4,898
1987	587.1	2,028	1,191	157.1	1,871	500.0	480.3	100,246	145	650	43,332	4,979	4,775	4,436	4,454
1988	634.1	2,160	1,370	164.6	2,254	476.7	394.6	118,499	87	859	43,853	4,480	4,185	3,799	3,933
1989[1]	678.4	2,016	1,367	170.8	2,340	482.6	365.0	141,782	3	414	27,889	4,020	3,825	3,507	3,631
1990[1]	727.4	2,198	1,599	174.5	2,774	485.3	390.4	160,000	3			3,803	3,625	3,247	3,463

[1] Preliminary. [2] Domestic. [3] For consumption. [4] Owned by dealer & mfgrs., converted to a farm-sales weight equivalent. [5] In packages & in bulk & other. *Source: Agricultural Marketing Service, U.S.D.A.* T.700

Tobacco Production in the U.S., by Types In Million Pounds (Farm–Sales Weight)

Types	11–14	31	32	21	22	23	35–36	37	41	42–44	51	54	55	61
1982	1,006	822	42.0	5.5	— 47.7 —		19.9	.7	21.4	3.5	3.5	— 20.1 —		1.6
1983	821.3	481.4	37.4	4.6	24.3	8.2	14.3	.4	14.2	1.9	2.5	9.2	7.5	1.7
1984	864.6	712.2	38.1	6.1	37.6	12.9	19.0	.6	14.6	2.2	1.9	8.2	8.2	1.7
1985	800.3	573.3	32.9	4.5	34.5	11.4	15.2	.2	15.6	1.7	2.1	9.6	8.4	2.0
1986	644.6	407.9	27.8	3.5	26.6	11.2	10.9	.2	15.2	.5	2.0	5.5	6.4	1.7
1987	690.9	419.4	20.7	2.6	17.5	7.5	6.8	.1	11.4	.1	1.9	5.7	2.7	1.6
1988	813.2	477.2	18.4	2.9	19.8	8.0	7.4	.1	11.7	—	1.6	5.1	2.0	2.1
1989	808.4	482.6	15.3	2.5	18.5	8.0	6.4	.1	10.7	—	1.3	7.8	3.6	2.3
1990[1]	925.3	586.8	15.9	2.9	22.2	8.6	7.6	.1	12.6	—	1.2	8.8	4.4	2.6

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.701

U.S. Exports of Unmanufactured Tobacco In Millions of Pounds (Declared Weight)

Year	Australia	Belg.-Luxem.	Denmark	Egypt	France	W. Germany	Thailand	Ireland	Japan	Netherlands	Norway	Italy	Sweden	Switzerland	United Kingdom	Total U.S. Exports
1981	12.6	9.5	11.1	16.1	6.1	83.2	18.4	3.9	117.0	28.6	4.2	26.5	9.9	22.2	39.4	584.5
1982	10.1	15.2	16.8	22.0	5.3	68.2	27.7	4.7	110.3	25.1	3.6	28.1	8.7	26.7	30.7	572.0
1983	9.7	9.6	20.2	21.6	7.3	58.0	9.1	3.2	114.1	28.4	5.7	32.2	12.4	16.8	27.8	524.4
1984	8.2	9.4	19.8	37.4	5.1	66.0	14.6	8.0	92.1	22.3	4.7	31.3	11.5	25.3	31.8	542.7
1985	7.3	11.5	16.2	41.2	9.9	76.7	17.8	7.3	102.0	20.9	3.3	28.7	15.8	23.9	18.4	548.9
1986	11.7	10.1	14.5	46.5	8.4	82.7	13.0	3.4	83.2	31.2	4.3	22.5	10.2	11.5	21.8	477.5
1987	8.5	8.2	15.6	11.0	6.7	69.3	7.5	1.2	105.4	32.1	3.3	22.4	8.0	12.6	16.7	430.0
1988	9.0	9.7	16.4	15.7	5.7	87.2	13.5	2.0	70.4	41.0	3.7	32.4	12.0	15.5	19.6	481.8
1989[1]	6.2	12.3	13.8	.4	4.8	75.4	15.7	1.3	105.3	43.2	3.6	17.1	8.3	10.4	18.4	496.3
1990[2]	8.0	14.5	15.0	.1	5.0	78.5	18.0	1.5	98.0	40.0	3.3	19.0	9.0	12.0	21.0	475.0

[1] Preliminary. [2] Estimate. *Source: Bureau of the Census* T.702

U.S. Salient Statistics for Flue-Cured Tobacco (Types 11–14)

Crop Year	Acres Harvested	Yield Acre	Marketings	Stocks, July 1	Total Supply	Exports	Dom. Disappearance	Total Disappearance	Farm Price	Crop Value	Parity Price[2]	Price Support Level	Placed Under Gov't. Loan	Under Loan July 1
	1,000	100 Lbs.	Millions of Pounds						¢ Lb.	Mil. $	¢ Lb.		Mil. Lb.	
1981	540.6	21.6	1,144	2,013	3,157	523	489	1,012	166.4	1,947	243.0	158.7	105.9	595.8
1982	472.3	21.3	994	2,145	3,139	456	479	935	178.5	1,774	254.0	169.9	259.9	518.7
1983–4	409.8	20.0	855	2,205	3,060	453	442	894	177.9	1,521	267.0	169.9	194.8	688.4
1984–5	392.0	22.1	850	2,165	3,015	481	454	935	181.1	1,539	284.0	169.9	158.6	797.5
1985–6	357.1	22.4	789	2,080	2,870	435	477	912	171.9	1,376	289.0	169.9	131.6	833.1
1986–7	308.3	21.0	667	1,958	2,625	393	480	873	152.7	1,019	288.0	143.8	55.2	790.4
1987–8	324.6	21.3	683	1,752	2,435	385	537	922	158.7	1,084	300.0	143.5	24.8	647.8
1988–9	366.4	22.2	796	1,513	2,309	363	522	885	161.3	1,311		144.2	15.2	466.1
1989–90[1]	390.7	20.7	808	1,424	2,262	387	567	954	167.4	1,405		146.8	28.4	341.6
1990–1[3]	418.0	22.1	925	1,308	2,228	395	550	945	167.1	1,546		148.8		300.0

[1] Preliminary. [2] As of applicable date when support level was computed. [3] Estimate. *Source: Agricultural Marketing Service, U.S.D.A.* T.697

U.S. Salient Statistics for Burley Tobacco (Type 31)

Crop Year	Acres Harvested	Yield Per Acre	Marketings	Stocks, Oct. 1	Total Supply	Exports	Dom. Disappearance	Total Disappearance	Farm Price	Crop Value	Parity Price[2]	Support Level	Under Gov't. Loan	Under Loan on Oct. 1
	1,000	100 Lbs.	Millions of Pounds						¢ Lb.	Mil. $	¢ Lb.		Mil. Lb.	
1981	331.2	22.0	726	1,000	1,726	141	464	605	180.7	1,318	253.0	163.6	.8	0
1982	346.2	23.7	777	1,121	1,898	135	444	579	181.0	1,406	266.0	175.1	269.2	.7
1983–4	292.6	16.5	527	1,319	1,845	112	389	501	177.3	934	280.0	175.1	255.6	226.1
1984–5	315.7	22.6	674	1,344	2,018	154	403	556	187.6	1,264	294.0	175.1	201.0	377.2
1985–6	255.1	22.5	542	1,462	2,004	151	425	576	159.7	866	297.0	148.8	82.7	548.9
1986–7	210.7	19.4	420	1,426	1,846	165	402	567	156.5	657	296.0	148.8	38.8	525.7
1987–8	215.9	19.4	428	1,279	1,706	157	478	635	156.3	669	306.0	148.8	90.0	329.7
1988–9	226.4	21.1	468	1,073	1,541	164	414	578	161.0	768		150.0	14.6	209.4
1989–90[1]	244.4	19.8	498	963	1,461	169	446	614	167.2	898		153.2	.3	170.4
1990–1[3]	263.3	22.0	578	847	1,425	170	442	612	169.0	977		155.8		85.0

[1] Preliminary. [2] As of applicable date when support level was computed. [3] Estimate. *Source: Agricultural Marketing Service, U.S.D.A.* T.698

Exports[1] of Tobacco from the United States In Thousands of Metric Tons[3]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1981	44.8	32.8	53.7	49.4	44.6	40.1	31.3	27.4	45.5	63.2	86.8	55.6	575.3
1982	31.7	39.4	62.1	41.8	54.0	37.2	23.9	30.2	24.8	74.5	92.2	50.5	562.3
1983	24.2	38.3	46.0	44.0	33.6	32.7	28.6	36.0	26.4	51.7	87.9	60.3	509.8
1984	42.0	40.2	43.3	32.4	26.5	28.9	14.8	18.4	39.1	68.0	97.9	77.1	528.5
1985[5]	15.7	22.0	21.8	24.5	7.2	6.5	9.2	17.8	18.6	21.8	38.7	40.5	244.3
1986	9.8	14.5	22.1	21.0	12.9	10.1	7.4	10.7	10.0	15.0	30.1	48.1	211.7
1987	27.0	11.5	19.6	18.8	14.6	9.4	8.8	7.1	9.8	12.7	24.4	29.4	193.1
1988	32.7	17.1	21.3	25.7	15.8	10.3	11.8	11.2	14.3	14.8	20.9	20.6	216.5
1989[2]	25.9	25.4	22.2	19.4	14.7	11.7	7.0	10.7	17.7	18.0	32.1	19.6	224.4

[1] Represents unmanufactured tobacco, including stems, trimmings and scrap. [2] Preliminary. [3] Prior to 1985, the data is in millions of pounds. *Source: Department of Commerce* T.699

Tung Oil

World trade in tung oil declined slightly in the 1989/90 season ended September 30, 1990. Exports world-wide were estimated to have totaled 47,300 tonnes, below 47,600 the previous season and 48,200 tonnes in 1987/88.

Tung oil prices moved sharply higher late in calendar 1990 on reports of crop losses in Argentina and China and because of increased demand from the USSR. The price of tung oil, ex-tank Rotterdam, averaged $1,071 a tonne in 1989/90 (Oct.-Sept.), according to *Oil World*, the statistical publication. Prices in the first five months of the 1990/91 season (Oct.-Feb.) showed further gains, averaging $1,425 a tonne.

Tung oil is produced from tung nuts and is used as an industrial lubricant and drying oil.

Supply and Distribution of Tung Oil in the United States In Thousands of Pounds

							Factory Consumption (Crop Yr. Beg. Oct.)				
Year	Stocks Jan. 1	Production	Imports	Exports[2]	Total Supply	Apparent Disappearance	Total	Paint & Varnish	Resins & Plastics	Other Inedible Prods	Oil Acquired By CCC
1981	2,800		15,033				14,600	5,800	3,200	5,600	
1982[1]	2,200		14,398				12,700	5,300	2,800	4,000	
1983[1]	2,217		13,635				19,700	5,600	3,400	10,800	
1984[3]	3,137		13,929				12,400	5,100	4,500	2,900	
1985[3]	2,546		15,298				11,600	5,200	4,300		
1986[3]	3,514		12,291				12,200	3,700	6,100		
1987[3]	4,516		12,996				14,800	3,600	8,800		
1988[3]	3,224		14,123				12,500	2,300	5,100		

[1] Preliminary. [2] Also including re-exports. [3] Estimate. *Source: Economic Research Service, U.S.D.A.* T.703

U.S. Consumption of Tung Oil in Inedible Products In Thousands of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1985	1,110	1,079	887	1,039	818	1,197	1,303	1,096	1,105	1,068	911	891	12,504
1986[1]	884	964	959	989	923	1,093	976	895	949	1,091	854	734	11,311
1987[1]	875	940	861	1,054	1,265	1,134	978	1,055	1,146	1,232	1,260	1,847	13,647
1988[1]	2,169	1,143	988	1,117	1,072	878	713	1,148	1,276	2,751	2,509	4,317	20,081
1989[1]	4,106	3,360	3,074	2,717	2,313	2,508	2,511	2,512	2,541	2,845	2,668	2,510	33,665
1990[1]	2,573	646	680	823	795	923	712	738	607	626	472	611	10,206

[1] Preliminary. *Source: Bureau of the Census*

U.S. Stocks of Tung Oil at Factories & Warehouses In Thousands of Pounds

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1984	3,137	2,867	3,042	2,634	2,609	2,102	1,815	1,802	1,476	1,192	2,113	2,029
1985[1]	2,546	2,589	2,353	1,642	1,707	1,599	1,564	2,163	2,272	1,526	1,798	2,617
1986[1]	3,514	3,347	2,651	3,036	2,847	2,255	2,691	2,742	2,151	2,212	3,350	4,123
1987[1]	4,516	3,937	2,830	3,582	2,996	865	2,768	3,699	3,779	3,325	3,625	3,768
1988[1]	3,224	4,501	5,296	4,374	4,304	3,500	3,913	3,797	3,422	4,999	3,821	3,498
1989[1]	3,739	3,012	3,867	3,526	3,225	3,216	4,836	3,860	2,640	5,450	4,649	5,037
1990[1]	5,448	4,648	2,744	2,529	3,164	2,859	2,003	1,553	1,880	1,018	1,913	2,374
1991[1]	1,829											

[1] Preliminary. *Source: Bureau of the Census* T.703A

Average Price of Tung Oil[1] (Imported-Drums) F.O.B. New York In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1984	138.0	138.0	138.0	138.0	138.0	134.0	134.0	117.0	106.9	89.0	81.0	81.0	119.0
1985	81.0	81.0	81.0	81.0	81.0	N.A.	52.0	53.0	55.0	55.0	55.0	52.5	66.1
1986	52.0	46.5	46.1	44.5	43.5	40.1	36.5	34.8	33.0	32.0	32.0	32.0	31.2
1987	33.20	44.50	50.50	59.50	57.25	56.38	56.50	56.50	56.50	56.50	56.50	56.50	53.36
1988	57.63	58.00	58.00	56.88	53.50	52.00	51.00	49.80	49.00	48.25	44.75	44.00	51.65
1989	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00
1990	41.00	41.00	41.00	59.00	59.00	58.25	58.00	58.00	58.00	55.50	62.00		

[1] Carlots, imported, f.o.b. New York. *Source: Economic Research Service, U.S.D.A.* T.704

Tungsten

Only two U.S. tungsten mines operated during 1990, both at rates well below capacity, and one was closed for nearly half the year. World mine production rose to 44,600 tonnes from 43,280 in 1989, despite an estimated 15 percent decline in prices for tungsten concentrates. China increased production by 9.5 percent to 23,000 tonnes. Among free-market producers, two major concentrate-producing mines were offered for sale, and a third mine was closed.

U.S. apparent tungsten consumption fell by 18.8 percent in 1990 to 8,500 tonnes from 10,474 in 1989. The estimated total value of primary tungsten consumed in the U.S. was $180 million.

Tungsten is the preferred and essentially irreplaceable material for filaments, electrodes, and contacts in lamps and lighting products, which accounted for 12 percent of U.S. end use in 1990. Cemented tungsten carbide remained the primary cutting-tool insert material, despite competition from ceramics and ceramic-metallic compounds. Metalworking, mining, and construction machinery and equipment accounted for 67 percent of U.S. use in 1990.

World Concentrate Production of Tungsten In Metric Tons of Contained Tungsten[3]

Year	Argentina	Australia	Austria	Bolivia	Brazil	Burma	China	Japan	Korea Rep. of	Mongolia	Portugal	Spain	Thailand	United States	USSR	World Total
1987	18	1,150	1,250	638	672	493	21,000	259	2,375	1,500	1,207	81	705	34	9,200	42,177
1988[1]	17	1,281	1,235	900	433	307	21,000	266	2,029	2,000	1,382	80	651	N.A.	9,200	42,604
1989[2]	20	1,250	1,245	1,075	450	300	21,000	300	1,800	2,000	1,300	80	700	N.A.	9,300	43,280
1990[2]		900	1,100	1,400	400	200	23,000		1,700		1,400		700		9,300	44,600

[1] Preliminary. [2] Estimate. [3] Conversion Factors: WO_3 to W, multiply by 0.7931; 60% WO_3 to W, multiply by 0.4758.
Source: Bureau of Mines T.706

Salient Statistics of Tungsten in the U.S. In Metric Tons of Contained Tungsten

					Consumption of Tungsten Products by End Uses									Stocks at End of Year (Concentrate)	
					Steel										
Year	Net Import Reliance as a % of Apparent Consumption	Production[1]	Shipments from Mines[1]	Total Consumption	Tool	Stainless & Heat Assisting	Alloy Steel[3]	Superalloys	Cutting & Wear Resistant Materials	Pdt's. Made from Metal Powder	Miscellaneous	Chemicals & Ceramic	Exports	Consumers & Dealers	Producers[1]
1987	79	34	34	5,506	306	68	28	212	3,911	N.A.	2,662	41	2	329	21
1988[2]	76	N.A.	N.A.	7,832	317	73	77	279	4,651	2,066	748	84	172	499	21
1989[4]	77			7,725	290	62		258	5,018	1,828	476	52	203	1,261	10
1990[4]	73			7,300										1,150	

[1] Primary concentrates. [2] Preliminary. [3] Other than tool. [4] Estimate. *Source: Bureau of Mines* T.707

U.S. Imports[1] of Tungsten Ores & Concentrates and Ferrotungsten In Metric Tons[4] (Tungsten Content)

	Tungsten Ores and Concentrates Imported (For Consumption)												Ferrotungsten Imported			
Year	Australia	Bolivia	Brazil	Canada	South Korea	Mexico	Portugal	Spain	Thailand	Peru	Total 1,000 Pounds	Value Mil. $	Austria	Portugal	China	Total 1,000 Lbs.
1987	65	750	—	312	—	227	422	16	418	362	4,414	24.0	40	15	220	300
1988[2]	235	978	—	134	—	167	466	4	378	370	8,045	48.3	—	—	468	599
1989[4]	138	753	—	—	—	113	333	—	88	666	7,896	45.1	—	—	359	360
1990[4]											7,000					

[1] Imports for consumption. [2] Preliminary. [3] Estimate. *Source: Bureau of Mines* T.708

Tungsten Prices In U.S. Dollars

	Markets		Reported Value, F.O.B. U.S. Mine[2]				Markets		Reported Value, F.O.B. U.S. Mine[2]		
Year	U.S.[1]	European	Total (Mil. $)	Avg. per Unit of WO_3	Avg. per Kilogram of Tungsten	Year	U.S.[1]	European[1]	Total (Mil. $)	Avg. per Unit of WO_3	Avg. per Kilogram of Tungsten
1983	85.00	81.00	10.5	82.17	10.36	1987	50.00	53.00	.2	50.34	6.35
1984	85.00	87.00	13.4	90.63	11.43	1988[3]	59.00	58.00	N.A.	N.A.	N.A.
1985	68.00	71.00	9.1	73.77	9.30	1989[4]	54.00	61.00	N.A.	N.A.	N.A.
1986	46.00	53.00	5.8	56.04	7.07	1990[4]	43.00	55.00			

[1] Conc., Stu WO_3, Average (a short ton unit [stu] of tungsten trioxide [WO_3] contains 15,862 pounds of tungsten). [2] Values apply to finished concentrate & are in some instances f.o.b. custom mill. [3] Preliminary. [4] Estimate. *Source: Bureau of Mines* T.709

Turkeys

U.S. turkey production in 1990 was up 9 percent from a year earlier. First-quarter output was especially strong, but growth moderated in the second half of the year. The top three producing states were North Carolina, Minnesota, and California, and they accounted for almost half of U.S. production. Minnesota, California, and Arkansas showed sizeable increases in turkey output for the year. Turkey production in the U.S. has doubled since 1980 and has been increasingly concentrated among larger producers.

U.S. per capita turkey consumption rose to 18.3 pounds in 1990, up from 17.1 pounds a year earlier. Low prices early in the year and a promotional campaign were major reasons for the higher demand. November's drawdown was lower than in previous years, leading to high stocks and sharply lower prices at the end of the year. Year-round turkey consumption has grown, because of health concerns and the increased availability of parts. Consumption in the typically heavy fourth quarter demand period has been relatively stable over the past several years, while consumption over the remainder of the year has grown steadily. Per capita consumption was expected to be over 19 pounds in 1991.

U.S. exports of turkeys and turkey parts rose by over 10 percent in 1990, because of ample supplies and moderate prices. Mexico was again the top foreign market for U.S. turkey meat, taking about one quarter of total U.S. exports. About 80 percent of the shipments to Mexico consisted of lower-priced turkey parts, with the remainder being whole birds. Economic growth and limited domestic poultry production have made the Pacific Rim countries attractive export markets for U.S. turkey meat. Exports to these countries grew by around 50 percent in 1990. Shipments to Canada, another big market for U.S. turkey meat, dropped in 1990, due to higher production in that country.

After early weakness, turkey prices rose steadily in 1990, but high stocks and seasonal declines led to sharply lower prices late in the year. Turkey hens averaged about 63 cents per pound in 1990, below the year-earlier level. Wholesale prices dropped sharply in late December, after peaking in October. Low feed costs allowed producers to receive positive net returns at times during 1990, however, and net returns were about break-even for the year. Prices in 1991 were expected to be about the same as in 1990, as stocks are drawn down and production growth slows.

Salient Statistics of Turkeys in the U.S.

							Ready-to-Cook Basis						In Cents Per Lb.			
		In Millions		(Liveweight)			Million Pounds				Consumption Civilian		Production Costs		Wholesale Ready-to-Cook	
Year	Turkey-Feed Price Ratio[3] Lbs.	(All Breeds) Poults Placed	Number Raised	Produced Million - Lbs. -	Farm Price ¢ Lb.	Value of Production - Million $ -	Production	Commercial Storage Jan. 1	Exports & Shipments	Military	Total	Per Capita Lb.	Feed	Total	Total Costs	3-Regions Composite Price
1977	3.8	148.4	136.4	2,563	35.5	910	2,023	203	56	11	1,992	9.3	22.6	31.6	51.4	56.2
1978	4.6	157.5	138.9	2,655	43.6	1,157	2,098	168	57	15	2,019	9.2	22.1	31.7	51.7	68.8
1979	4.2	180.0	156.5	2,958	41.1	1,214	2,344	175	57	19	2,204	9.9	25.3	35.8	58.2	67.0
1980	3.6	188.7	165.2	3,077	41.3	1,272	2,432	240	81	16	2,370	10.5	26.1	37.1	61.0	66.0
1981	3.1	187.3	170.9	3,264	38.2	1,248	2,577	198	68	15	2,450	10.7	30.2	41.2	66.1	64.0
1982	3.3	184.2	165.5	3,175	39.5	1,255	2,522	238	56	12	2,489	10.8	24.5	36.3	60.1	63.6
1983	3.0	182.1	170.7	3,336	38.0	1,269	2,649	204	54	13	2,609	11.2	26.6	39.8	65.4	63.5
1984	3.9	184.2	171.3	3,384	48.9	1,655	2,685	162	33	13	2,676	11.4	29.0	42.0	69.0	72.0
1985	4.5	198.7	185.3	3,704	49.1	1,820	2,942	125	34	13	2,870	12.1	21.4	35.1	60.1	77.3
1986	4.1	225.4	207.2	4,147	47.0	1,951	3,271	150	31	10	3,212	13.3	21.1	34.8	59.9	75.2
1987	3.2	264.2	240.4	4,895	34.8	1,703	3,832	178	37	15	3,686	15.1	19.4	33.1	57.6	57.0
1988[1]	3.0	261.4	242.4	5,059	36.9	1,951	3,968	282	51		4,101	16.0	24.7	38.2	64.3	61.8
1989[2]	3.2	265.0	261.6	5,250	40.0	2,239	4,276	250	41		4,250	17.1	26.7	40.4	66.8	66.0
1990[2]	3.3		281.3	5,500	38.3		4,671	236	48		4,569	18.2	23.4	37.1	62.6	63.1

[1] Preliminary. [2] Estimate. [3] Lbs. of feed = in value to 1 lb. of turkey live weight. *Source: Economic Research Service, U.S.D.A.* T.710

Turkey Per Capita Consumption in the U.S. by Quarters In Pounds

Year	First	Second	Third	Fourth	Total	Year	First	Second	Third	Fourth	Total
1981	1.6	1.9	2.5	4.6	10.7	1986	2.4	2.5	3.2	5.3	13.4
1982	1.8	2.1	2.6	4.3	10.7	1987	2.6	3.0	3.5	6.0	15.1
1983	2.1	2.2	2.5	4.4	11.2	1988	3.1	3.5	3.9	5.5	16.0
1984	2.0	2.2	2.7	4.5	11.4	1989[1]	3.2	3.4	4.3	6.1	17.1
1985	2.1	2.3	2.9	4.9	12.1	1990[1]	3.6	3.8	4.4		

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.711

U.S. Basis of Turkey-Feed Price Ratio In Pounds[1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1985	4.7	3.8	3.7	3.7	3.7	3.9	4.2	4.5	5.0	5.5	5.5	5.5	4.5
1986	3.4	3.4	3.5	3.5	3.8	4.3	4.5	4.6	4.7	4.9	4.8	4.0	4.1
1987	3.3	3.4	3.4	3.5	3.4	3.3	3.1	3.0	2.9	2.8	3.1	3.6	3.2
1988	2.9	2.6	2.5	2.7	2.8	3.0	3.0	3.1	3.4	3.6	3.6	2.9	3.0
1989	2.7	3.0	3.1	3.4	3.5	3.5	3.3	3.3	2.9	3.2	3.4	3.2	3.2
1990[2]	3.0	2.8	3.1	3.1	3.2	3.2	3.2	3.4	3.4	3.6			

[1] Pounds of feed equal in value to one pound of turkey liveweight. [2] Preliminary. *Source: Agricultural Statistics Board, U.S.D.A.*

Wholesale Price of Turkeys[2] (Hens, 8–16 lbs.) N.Y. In Cents per Pound

													— Yearly Average Price —		
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Avg.	4-Region Retail	Farm Price[1]
1980	62.3	57.8	56.8	54.1	53.3	55.5	63.3	67.2	74.5	77.0	75.0	67.0	63.6		40.0
1981	59.4	60.7	63.8	61.2	63.5	66.2	66.8	61.8	59.5	56.4	57.3	51.7	60.7	97.7	38.4
1982	53.6	55.8	56.0	55.8	58.8	61.8	64.1	64.1	68.0	69.6	67.2	54.2	60.8	92.6	39.5
1983	53.6	54.9	56.0	54.4	56.6	60.9	58.5	57.6	65.0	65.1	67.0	76.1	60.5	91.7	38.0
1984	72.2	64.7	66.1	67.0	66.8	67.0	68.6	72.4	76.2	82.6	91.5	97.3	74.4	98.7	48.9
1985	74.0	65.6	67.0	64.6	62.6	68.1	72.8	78.4	82.4	90.2	93.1	86.9	75.5	105.2	49.1
1986	60.3	61.7	63.9	64.6	67.1	73.8	77.9	80.5	81.2	83.2	80.7	71.1	72.2	106.6	47.0
1987	55.3	58.5	60.3	58.3	55.3	55.7	56.3	56.1	56.1	54.7	60.7	66.5	57.8	101.2	34.8
1988	52.8	47.1	47.0	46.9	49.3	57.1	70.8	70.5	76.0	79.6	76.0	61.6	61.1	95.7	36.9
1989	59.0	62.2	65.7	68.3	72.1	73.0	66.4	62.6	57.9	67.8	72.5	72.7	66.7	99.4	40.0
1990	55.6	55.2	58.9	59.6	61.3	62.9	63.4	66.6	69.0	76.2	73.7	56.1	63.2	99.3	38.3

[1] Live weight. [2] Ready-to-cook. *Source: Economic Research Service, U.S.D.A.* T.713

Certified Federally Inspected Turkey Slaughter in the U.S. In Millions of Lbs.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1978	81.8	59.7	86.3	80.8	129.3	189.5	199.9	248.8	230.9	271.2	248.9	156.3	1,983
1979	99.3	77.2	95.0	112.3	157.3	195.9	219.2	267.7	233.0	297.5	261.9	165.5	2,182
1980	—	378.6	—	—	528.3	—	—	711.6	—	—	713.9	—	2,232
1981	—	398.1	—	—	553.2	—	—	785.2	—	—	772.6	—	2,509
1982	—	410.4	—	—	527.9	—	—	761.5	—	—	759.1	—	2,459
1983	—	462.2	—	—	581.5	—	—	760.3	—	—	759.0	—	2,563
1984	—	432.3	—	—	589.3	—	—	777.2	—	—	775.3	—	2,574
1985	—	482.1	—	—	628.3	—	—	854.6	—	—	834.8	—	2,800
1986		174.6	193.6	205.2	236.4	275.8	307.6	299.4	331.4	365.8	307.1	248.2	3,133
1987	215.4	211.9	241.9	255.0	274.2	330.1	358.8	357.4	383.9	411.0	373.5	297.0	3,717
1988[1]	254.6	266.9	314.0	276.6	331.3	373.2	323.3	377.3	365.8	395.7	371.7	272.8	3,923
1989[1]	254.1	248.1	301.3	268.8	356.9	388.6	360.4	430.3	385.7	422.6	423.1	334.9	4,175
1990[1]	319.0	297.8	366.6	328.4	384.1	389.2	395.7	444.0	382.9	477.1			

[1] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.714

Storage Stocks of Turkeys (Frozen) in the United States In Millions of Pounds

Year	Jan. 1	Feb. 1	Mar. 1	Apr. 1	May 1	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1	Dec. 1
1979	175.1	170.7	154.7	135.7	128.0	153.1	200.9	272.5	382.5	432.3	445.5	281.2
1980	240.0	246.8	225.0	208.9	206.6	233.8	286.6	325.8	384.0	398.8	420.2	257.6
1981	198.0	208.3	207.9	220.7	228.7	256.2	327.3	400.8	466.0	532.1	528.1	305.1
1982	238.4	236.9	236.4	232.8	—	—	281.7	—	—	435.8	—	—
1983	203.9	193.8	187.7	185.3	192.3	210.5	255.7	323.5	384.3	432.2	460.1	251.6
1984	161.8	161.5	145.8	144.4	142.2	180.9	226.3	278.2	331.3	390.6	415.4	195.7
1985	125.3	124.1	129.5	131.1	157.0	183.7	243.3	304.7	387.8	444.5	484.1	208.2
1986	150.2	159.2	163.6	150.5	188.9	229.5	297.8	388.1	449.3	511.6	543.2	249.0
1987	178.2	198.1	211.4	226.0	250.8	298.1	381.6	472.7	560.0	618.7	612.9	291.9
1988	282.4	281.8	321.5	339.0	370.7	410.1	456.8	496.2	551.9	572.8	583.3	303.5
1989	249.7	262.5	263.1	269.2	298.7	355.6	454.6	496.9	574.3	569.3	571.8	258.6
1990[1]	235.9	267.1	276.3	318.8	354.4	405.6	489.3	541.7	593.1	620.4	622.9	334.2

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.712

Uranium

Because of soft demand, the uranium industry remained depressed in 1990, and prices continued to be weak. U.S. spot prices ended 1990 at $9.70 per pound, compared with $9.00 a year earlier, according to NUEXCO, the uranium dealer. Yet, many purchases continued to be made under long-term contracts at prices above the spot market. Demand has been lackluster since the Three Mile Island and Chernobyl accidents, but some observers felt it would eventually pick up. In 1990, 435 nuclear power plants operated worldwide, and another fifty were under construction, eighteen of which were in the U.S. The uranium needs of those nuclear reactors totaled 45,700 tonnes in 1990 and were expected to rise to 47,500 in 1995, according to the London-based Uranium Institute.

In Canada, which is the leading uranium producer, Rio Algom Ltd. announced plans to close two mines in 1990, because of slack demand and low prices. The Company's Panel and Quirke mines, located in Ontario, were to stay open long enough to meet existing supply contracts and then to shut down in early 1991. About 1,600 jobs were likely to be cut. Together, the two mines produced over 6 million pounds of uranium oxide a year. Rio Algom intended to maintain only one uranium facility, also in Ontario, to supply Ontario Hydro under contract. In 1988, the company closed its Lisbon mine, which was located in Utah and produced 508,000 pounds a year.

Another Canadian firm, Denison Mines Ltd., also began cutting uranium production in 1990. The company said it would trim its output of uranium oxide at Elliot Lake, Ontario, from 4.3 million pounds to 2.7 million and that 450 jobs would be lost. Canada produces about one-third of the world's uranium and exports about 85 percent of its output, mostly to the U.S. About 40 percent of the uranium needs of U.S. utilities are supplied by Canadian firms. Canada's Saskatchewan uranium mines are among the world's lowest-cost producers.

In the U.S., where at least three uranium operations closed in the late 1980s, Uranium Resources Inc. of Dallas said it would place its Kingsville Dome mine near Corpus Christi on standby status in 1990 and concentrate on its lower-cost mine in Rosita, Texas. Annual production at the Rosita mine was anticipated be about one million pounds, and its costs were expected to be among the lowest in the world.

The U.S. is the second largest uranium producer, with thirteen facilities located in Utah, Wyoming, New Mexico, Texas, Louisiana, and Florida. Four of those are conventional mines, three are byproduction, and the rest use solution mining.

Free-World Production of Uranium Oxide (U_3O_8) Concentrate In Thousands of Short Tons

Year	Argentina	Australia	Canada	Spain	Namibia	Central Africa	France	Portugal	Niger	Brazil	Sweden	South Africa	United States	World Total
1980	.2	2.0	9.3		5.3		3.4		5.3	0		8.0	21.8	57.2
1981	.2	3.7	10.0		5.2		3.3		5.7	.1		8.0	19.2	57.1
1982	.2	5.7	10.5		4.9		3.7		5.5	.4		7.6	13.4	53.7
1983	.3	4.8	9.8		4.8		4.2		5.2	.4		7.5	10.6	49.3
1984		5.7	14.5		4.8	5.5	4.1					7.5	7.5	50.4
1985		4.3	14.2		4.5	5.3	4.2					6.3	5.7	45.2
1986[2]		5.4	15.3		4.6	5.2	4.3					6.0	7.0	48.4
1987[2]		4.9	16.2		4.6	5.0	4.4					5.2	6.2	47.7
1988[2]		4.7	16.2		4.6	5.1	4.5					5.0	6.8	48.4

[1] Less than 50 tons. [2] Preliminary. *Source: Bureau of Mines, Dept. of Energy; NUEXCO.* T.720

Month–End Uranium (U_3O_8) Transaction Values[1]

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1980	42.00	39.30	38.60	38.40	37.90	37.60	37.30	31.60	30.60	29.00	28.70	27.70
1981	27.20	27.20	27.00	25.70	25.70	24.50	24.40	24.30	23.90	24.10	24.10	24.00
1982	24.00	23.70	23.40	22.60	22.70	21.50	20.30	19.10	17.30	17.00	17.55	18.80
1983	19.35	20.00	21.35	21.40	22.35	22.45	23.50	23.60	23.65	23.65	23.85	23.85
1984	23.05	22.50	19.25	17.90	17.00	16.50	16.60	16.40	16.55	16.05	15.90	15.90
1985	16.20	15.70	15.05	14.90	14.45	14.60	14.75	15.10	15.10	15.75	15.80	16.55
1986	16.55	16.70	16.70	17.10	17.05	17.20	17.50	17.45	17.35	17.25	17.30	17.35
1987	17.35	16.90	16.95	17.00	17.20	17.10	17.30	17.55	18.20	18.05	17.80	17.20
1988	16.85	16.65	16.55	16.45	16.10	15.80	15.45	15.00	14.50	14.40	13.30	12.50
1989												9.00
1990												9.70

[1] Transaction value is a weighted average price of recent natural uranium sales transactions, based on prices paid in transactions closed within the previous three-month period for which delivery is scheduled within one year of the transaction date; at least 10 transactions; and transactions involving a sum total of at least 2 million pounds of U_3O_8 equivalent. *Source: NUEXCO.*

Vanadium

Vanadium prices dropped from $4.20 a pound to $3.35 in mid-year 1990. The decline followed a period of abnormally high prices. In 1988, industry demand for ferrovanadium quickly outstripped available supply, and prices went off the meter. Prices shot up over $7.00 a pound in mid-1989 and, as a result, some substitutions were made using lower cost materials. According to the Bureau of Mines, one U.S. steel company reduced its vanadium usage by 40 percent.

By the first half of 1990, inventories had built up to a level where prevailing slack demand had a strong effect on prices. Towards year-end, vanadium prices were down around $2.85 a pound.

Total U.S. consumption of vanadium in the first eight months of 1990 was 2.59 milllion kilograms of contained vanadium. (No prior-year data were available for comparison.) Of that amount, 2.18 million kg. were used by the steel industry for the production of ferrovanadium. Other uses, including experimental usage of vanadium, totaled 411,127 kg. In the steel industry, the largest consumer of ferrovanadium is high-strength, low-alloy steel.

Use of vanadium in alloys was another major consumption area. In the first eight months of 1990, the Bureau of Mines reported that 365,614 kg. of vanadium were used in nonferrous alloys.

The U.S. engages in a fairly extensive trade in vanadium pentoxide. In January to August 1990, exports totaled 999,745 kg. to fourteen countries. The leading U.S. customer for vanadium pentoxide was Belgium, which imported 379,186 kg. of vanadium content. It was followed by Japan and Brazil.

U.S. exports of oxides and hydroxides to fifteen nations totaled 508,917 kg. for the period, with Canada the leading destination. In 1990's first eight months, Canada took 179,444 kg., followed by Sweden with 102,510 kg.

A major exporter of vanadium pentoxide, the U.S. is also an importer, and in the first eight months of 1990 imports of vanadium pentoxide were 81,521 kg. Other imports of vanadium totaled 385,606 kg. South Africa was the major supplier in both categories.

World Production of Vanadium from Ores and Concentrates In Short Tons (of Contained Vanadium)

Year	USSR	Chile	China	Finland	Australia	Norway	South West Africa[1]	South Africa	United States[1]	From[4] Petroleum – Residues, Ash – Japan	From[4] Petroleum – Residues, Ash – United States	Total	World Total
1981	10,500	140	5,000	3,431	77	380	—	13,908	5,126			2,587	41,149
1982	10,500	—	5,000	3,470	25	120	—	12,911	4,098	754	1,513	2,267	38,391
1983	10,500	—	5,000	3,516	—	—	—	9,737	2,171	778	893	1,671	32,595
1984	10,500	—	5,000	3,376	—	—	—	13,798	1,617	770	1,701	2,471	36,762
1985	10,500	—	5,000	2,350	—	—	—	15,449	N.A.	840	2,695	3,535	36,834
1986	10,600	—	5,000	—	—	—	—	16,930	N.A.	929	2,330	3,259	35,789
1987	10,600	—	5,000	—	—	—	—	15,715	N.A.	925	2,508	3,433	37,748
1988[2]	10,600		5,000	—				18,060	N.A.	925	3,252	4,177	37,837
1989[3]	10,600		5,000	—				18,050		925	2,633	3,558	37,358
1990[3]	11,000		6,000					18,000					35,000

[1] Recoverable vanadium. [2] Preliminary. [3] Estimate. [4] Production from petroleum residues, ashes, & spent catalysts. Mainly in Japan & the United States. *Source: Bureau of Mines*

T.722

Salient Statistics of Vanadium in the United States In Short Tons of Contained Vanadium

Year	Vanadium in Ores – & Concentrates –		Prod. of Vanad. Pent-oxide (V_2O_5)	Consumer Stocks Dec. 31	Vanadium Consumed by Uses[2]								$ Per Lb. Van. Pent-oxide[3]	General Imports[5]	Exports		
	Mine Produc-tion	Recover-able Vana-dium			Tool Steel	Cast Irons	High Strength Low Alloy	Non-ferrous Alloys	Chemi-cals	Carbon	Full Alloy	Total			Ore & Concen-trates[4]	Ferro-Vanadium (Gross	Vanad. Pent-oxide[7] Weight)
1981	5,852	5,126	11,367	683	584	42	2,123	852	56	1,278	1,832	6,863	3.52	2,435		435	
1982	4,093	4,098	8,689	326	273	20	1,148	461	29	698	811	3,496	3.50	1,112	418	326	1,582
1983	N.A.	2,171	4,344	374	426	10	966	505	19	577	716	3,277	3.50	58	154	775	2,648
1984	N.A.	1,617	4,678	449	610	18	1,636	905	22	683	816	4,761	3.50	633	317	469	3,712
1985	N.A.	N.A.	N.A.	360	522	22	1,383	788	14	1,135	944	4,883	3.50	303	325	453	1,527
1986	N.A.	N.A.	N.A.	314	510	24	1,136	652	11	1,026	856	4,308	3.50	2,013	429	513	1,544
1987	N.A.	N.A.	N.A.	372	465	25	1,336	684	12	1,197	816	4,653	3.50	2,264	479	436	1,461
1988				704	530	22	1,476	648	12	1,388	978	5,329	6.50	3,984	978	629	1,220
1989[1]				615	463	20	1,350	816	10	1,216	990	5,117	3.80	3,484	1,709	544	4,124
1990[6]												4,300	3.50	2,550	550	300	2,000

[1] Preliminary. [2] Represent about 90% of the total consumption. [3] Dealer export. [4] Also includes vanadium oxide & other compounds. [5] Ores, slags, residues. [6] Estimate. [7] Pentoxideanhydride. *Source: Bureau of Mines*

T.723

Wheat

With favorable growing conditions in many countries, world wheat production in 1990/91 was projected at 592 million tonnes, 10 percent more than the previous year. Output rose by 34 percent in the U.S., 17 percent in the USSR, and 3 percent in the EC. Canada's crop was 31.8 million tonnes, up 29 percent, and Australia's was 15.7 million, an increase of 11 percent. Argentina's offtake expanded by 10 percent to 11.2 million tonnes.

Because of larger crops and lower prices, global utilization was projected to rise by 5 percent to 563 million tonnes. The USSR was expected to consume 118 million tonnes, up 14 percent.

World exports were due to fall to 104.4 million tonnes from 107.5 million in a competitive market environment. The EC was expected to export 31 million tonnes, off slightly from a year earlier, and U.S. exports fell to 29 million tonnes from 33.6 million. Canadian shipments were to rise marginally to 17.5 million tonnes. Australian wheat exports were expected to increase slightly to 11 million tonnes, while Argentina's projected sales of 6.2 million were near a year earlier.

The Soviet Union was expected to import 12 million tonnes, versus 14.6 million the previous season, and exporting countries extended credits to the financially strapped Soviets. China was expected to import 10 million tonnes of wheat, less than 13 million a year earlier. Because overall production was high, world ending stocks were likely to jump by 22 percent to 145 million tonnes.

U.S. wheat production in 1990/91 was estimated at 2.74 billion bushels, versus 2.04 billion the previous season. Planted acreage was 77.3 million, and harvested acreage was 69.4 million, up 12 percent. Weather, especially in the Plains, was excellent. In Kansas, the largest producing state, average yield rose to 40 bushels per acre from 24 bushels in 1989. The national average yield was just under 40 bushels, compared to 33 the year before.

Production of hard red winter wheat, grown primarily in the central Plains, was 1.21 billion bushels, 70 percent above the previous drought-damaged crop. Output of soft red winter wheat totaled 543 million bushels, down slightly from a year earlier, while the white wheat crop rose by 24 percent to 312 million bushels.

The hard red spring crop, grown in the upper Plains, was 556 million bushels, or 28 percent more than the previous season. In North Dakota, yields increased by 50 percent, and production topped 277 million bushels. Production of durum wheat, used for pasta, was 122 million bushels, 33 percent above a year earlier. North Dakota was the largest producer with 104 million bushels.

U.S. carry-in stocks of wheat in 1990/91 were 536 million bushels, 24 percent less than the season before. The total supply of wheat expanded by 20 percent to 3.31 billion bushels.

Domestic use of wheat for food was due to rise to 765 million bushels from 731 million in 1989/90. With a sharp decline in wheat prices relative to corn, feed use of wheat was pegged at a record 450 million bushels, compared to 160 million the previous season.

U.S. exports faced strong competition and were expected to fall by 15 percent to 1.05 billion bushels. The USSR was offered credit or food assistance by a number of wheat suppliers in 1990. An additional setback for U.S. exporters was the loss of Iraq as a market, due to the trade embargo. In 1989/90, Iraq was the eighth largest U.S. wheat market. The U.S. continued to use the Export Enhancement Program aggressively, and major sales were made under the program to China, the USSR, and Algeria.

Domestic ending stocks of wheat were expected to rise by 78 percent to 957 million bushels. Because of increased supplies, prices were substantially below a year earlier.

U.S. Government Program

The 1990 Farm Bill made several changes in the 1991-95 wheat program. The basic loan rate will be determined by calculating the five-year moving average of farm prices, excluding the high and low years. Consideration will be made for the competitiveness of U.S. wheat in international markets and the stocks-to-use ratio. The minimum target price for 1991-95 was frozen at $4.00/bu. Producers were to receive income support payments on less acreage and to have greater flexibility in what could be planted.

Futures Markets

Wheat futures and options are traded on the Chicago Board of Trade, the Kansas City Board of Trade, and the Minneapolis Grain Exchange. Feed wheat futures are traded on the Winnipeg Commodity Exchange.

World Production of Wheat In Thousands of Metric Tons

Crop Year	Argentina	Australia	Canada	China	France	West Germany	India	Italy	Pakistan	Spain	Turkey	United Kingdom	USSR	United States	World Total[1]
1987–8	8,800	12,442	25,950	85,840	27,234	9,932	44,323	9,381	12,020	5,768	13,000	11,940	83,312	57,362	502,300
1988–9	8,400	14,100	16,000	85,400	29,660	11,922	46,200	7,945	12,675	6,173	15,000	11,750	84,400	49,320	500,300
1989–90[2]	10,200	14,100	24,600	90,800	(EC-12-8,300)		54,000		14,400		11,500		92,300	55,406	536,500
1990–1[1]	12,000	15,500	31,800	96,500	(EC-12-80,800)		54,000		14,300		14,000		108,000	74,992	594,300

[1] Estimated. [2] Preliminary. *Source: Foreign Agricultural Service, U.S.D.A.* T.724

World Wheat Supply & Demand In Millions of Metric Tons/Hectares

	Area Harvested	Yield	Production	World Trade	Utilization Total	Ending Stocks	Stocks as % of Util
1985/86	229.6	2.18	500.1	85.0	496.2	168.3	33.9
1986/87	228.2	2.33	530.7	90.7	522.5	176.4	33.8
1987/88	220.0	2.28	502.3	105.0	530.2	148.5	28.0
1988/89[1]	218.0	2.29	500.3	96.8	531.5	117.4	22.1
1989/90[1]	225.5	2.38	536.5	96.6	536.7	117.1	21.8
1990/91[2]	231.2	2.57	594.3	95.9	567.3	144.2	25.4

[1] Preliminary. [2] Estimate. *Source: Foreign Agricultural Service, U.S.D.A.* T.724a

Salient Statistics of Wheat in the United States

Crop Year	Planting Intentions 1,000 Acres	Acreage Harvested — 1,000 Acres			Avg.—All Yield Per Acre In Bushels	Farm Disposition (Million Bushels)			Value of Production Ths. $	Foreign Trade[5] — Million Bushels		Per Capita[1] Consumption — In Pounds	
		Winter	Spring	All		Used for Seed	Fed to Livestock	Sold		Domestic Exports[2]	Imports[3]	Flour	Cereal
1984–5	79,213	51,513	15,415	66,928	38.8	No Longer Available			8,755,033	1,421	9.4	119	3.1
1985–6	75,575	47,923	16,781	64,734	37.5				7,374,181	909	16.3	124	3.1
1986–7	72,068	43,170	17,518	60,723	34.4				5,044,347	999	21.3	125	3.2
1987–8	65,829	39,332	16,613	55,945	37.7				5,496,828	1,598	16.1	129	3.3
1988–9	65,529	39,800	13,389	53,174	34.1				6,684,000	1,419	22.6	129	3.4
1989–90[4]	76,615	41,509	20,680	62,189	32.7				7,576,000	1,233	23.4	123	3.4
1990–1[4]	77,286	49,976	19,377	69,353	39.6				7,408,000	1,075	23.0		

[1] Civilian only. [2] Includes flour milled from imported wheat. [3] Total wheat, flour & other products. [4] Preliminary. [5] Year beginning June. *Source: Economic Research Service, U.S.D.A.* T.728

Supply and Distribution of Wheat in the United States In Millions of Bushels

Crop Yr. Beginning June	Supply						Domestic Disappearance					Total Domestic Disap.	Exports[4]	Total Disappearance
	Stocks, June 1									Feed				
	On Farms	Mills, Elevators[3]	Total Stocks	Production	Imports[4]	Total Supply	Food	Seed	Industry	Residual[5]	(On Farms Where Grown)			
1985–6	582.1	843.2	1,425.2	2,424.1	16.3	3,866	674.3	93.0	—	284.2		1,051.5	909.1	1,961
1986–7	681.1	1,223.9	1,905.0	2,090.6	21.3	4,017	712.2	84.0	—	401.2		1,197.4	998.5	2,196
1987–8	560.0	1,260.9	1,820.9	2,107.7	16.1	3,945	720.7	85.0	—	280.3		1,086.0	1,597.8	2,684
1988–9	525.0	735.8	1,260.8	1,812.2	22.6	3,096	714.5	103.0	—	157.4		974.9	1,419.2	2,394
1989–90[1]	289.0	412.6	701.6	2,036.6	23.4	2,762	731.0	101.1	—	160.1		992.2	1,233.0	2,225
1990–1[2]	212.5	324.0	536.5	2,743.6	23.0	3,303	745.0	88.0	—	450.0		1,283.0	1,075.0	2,358

[1] Preliminary. [2] Estimated. [3] Also warehouses and all off-farm storage not otherwise designated, including flour mills. [4] Imports & exports are for wheat, including flour & other products in terms of wheat. [5] Approximate feed use. *Source: Economic Research Service, U.S.D.A.* T.737

Stocks, Production, and Exports of Wheat, by Classes In Millions of Bushels

Year Beginning June	Hard Spring			Durum[3]			Hard Winter			Soft Red Winter			White		
	June 1 Stocks	Production	Exports[2]	June 1 Stocks	Production	Exports[2]	June 1 Stocks	Production	Exports[2]	June 1 Stocks	Production	Exports[2]	June 1 Stocks	Production	Exports[2]
1986–7	498	451	199	121	98	82	1,009	1,017	429	79	292	114	198	232	175
1987–8	490	431	255	95	93	62	973	1,019	911	77	349	160	185	216	210
1988–9	402	181	195	83	45	20	567	882	639	75	473	315	135	232	250
1989–90[1]	219	433	280	60	92	55	302	712	360	39	548	345	81	251	193
1990–1[4]	155	556	180	50	122	50	215	1,211	380	32	543	285	85	312	180

[1] Preliminary. [2] Includes flour made from U.S. wheat & shipments to territories. [3] Includes "Red Durum." [4] Estimate. *Source: Economic Research Service, U.S.D.A.* T.727

Seeded Acreage, Yield and Production of All Wheat in the United States

Year	Seeded Acreage—1,000,000 Acres				Yield Per Harvested Acre—In Bushels				Production—1,000,000 Bushels			
	Winter	Not Durum	Durum	All	Winter	Not Durum	Durum	All	Winter	Not Durum	Durum	All
1987	48.8	13.7	3.3	65.8	39.8	33.7	28.2	37.7	1,565.4	449.7	92.6	2,107.7
1988	48.8	13.4	3.3	65.5	39.2	19.5	15.7	34.1	1,561.9	205.5	44.8	1,812.2
1989[1]	55.1	17.7	3.8	76.6	35.0	28.8	25.1	32.7	1,454.6	489.7	92.2	2,036.6
1990[2]	57.0	16.7	3.6	77.3	40.7	36.9	34.8	39.6	2,036.1	585.9	121.7	2,743.6

[1] Preliminary. [2] Estimate. *Source: Crop Reporting Board, U.S.D.A.* T.726

WHEAT

Production of Winter Wheat in the United States In Millions of Bushels

Year	Colorado	Idaho	Illinois	Indiana	Kansas	Michigan	Missouri	Montana	Nebraska	Ohio	Oklahoma	Oregon	Tennessee	Texas	Wash.	So. Dakota
1981	83.9	55.7	92.5	62.1	305.0	41.5	115.5	89.3	104.4	72.6	172.8	73.2	37.4	183.4	161.3	30.4
1982	81.5	53.0	67.5	43.3	458.5	23.0	74.8	80.6	101.5	51.6	227.7	59.4	29.9	144.0	125.4	36.3
1983	117.0	55.6	64.4	49.5	448.2	35.8	70.3	79.1	98.9	58.8	150.5	62.0	19.8	161.0	162.5	51.3
1984	110.4	56.7	70.4	48.3	431.2	45.6	84.1	67.0	81.0	48.4	190.8	66.2	21.4	150.0	148.8	61.2
1985	134.6	46.1	36.8	37.1	433.2	45.0	49.9	22.4	89.7	58.9	165.0	51.8	8.0	187.2	115.2	44.1
1986	92.8	51.9	36.1	30.1	336.6	30.6	18.8	64.0	76.0	48.3	150.8	53.9	10.7	120.0	102.9	57.6
1987	93.8	60.0	56.1	34.8	366.3	19.2	35.4	79.2	85.8	46.4	129.6	49.5	14.0	100.8	104.0	55.1
1988	75.9	50.8	67.5	35.0	323.0	26.0	76.0	39.9	72.0	46.0	172.8	46.9	21.5	89.6	108.5	21.6
1989	57.2	56.7	105.0	51.9	213.6	33.9	87.0	54.0	55.4	62.7	153.9	48.9	18.9	60.0	68.9	35.1
1990[1]	84.2	71.8	91.2	50.4	472.0	44.3	76.0	87.5	85.5	79.7	201.6	54.6	17.6	130.2	138.6	57.6

[1] Preliminary *Source: Crop Reporting Board, U.S.D.A.* T.734

United States Official Winter Wheat Crop Production Reports In Thousands of Bushels

Crop Year	Previous December	May 1	June 1	July 1	August 1	Sept. 1	Current December	Final
1981–2	1,977,079	2,078,137	2,013,607	2,092,692	2,064,845	2,059,205	2,098,719	2,097,057
1982–3	2,128,133	2,063,336	2,131,214	2,124,854	2,095,554	2,106,149	2,108,246	2,073,560
1983–4	Discontinued	1,893,241	1,882,916	1,937,388	1,963,243	1,976,843	1,993,888	1,988,304
1984–5		1,979,366	1,972,776	2,021,918	2,045,088	2,036,028	2,060,646	2,060,266
1985–6		1,974,228	1,892,438	1,854,254	1,842,884	1,839,284	1,827,195	1,826,625
1986–7		1,603,127	1,578,277	1,553,026	1,532,526	1,532,526	1,519,143	1,520,433
1987–8		1,549,344	1,577,489	1,574,439	2,125,097	2,114,492	1,565,176	1,565,381
1988–9		1,620,257	1,570,417	1,568,052	1,554,812	1,560,970	1,561,145	1,561,910
1989–90		1,430,148	1,407,898	1,461,924	1,466,049	1,451,746	1,453,842	1,454,642
1990–1		2,091,614	2,089,234	2,035,087	2,054,287	2,036,059		

Source: Crop Reporting Board, U.S.D.A. T.736

Production of All Spring Wheat in the United States In Millions of Bushels

	Durum Wheat							Other Spring Wheat									
Year	Arizona	California	Minnesota	Montana	North Dakota	South Dakota	Total Durum	Colorado	Idaho	Minnesota	Montana	North Dakota	Oregon	South Dakota	Utah	Washington	Total
1981	18.3	14.7	5.4	11.0	130.8	5.8	183.0	4.0	34.1	134.0	72.5	197.4	4.2	52.8	1.4	7.0	505.3
1982	7.0	11.6	3.0	9.9	110.8	3.5	145.9	3.5	41.8	120.8	89.9	209.3	4.1	58.8	1.6	13.4	545.5
1983	5.0	6.3	1.2	4.1	54.3	2.1	73.0	5.1	36.1	75.1	53.7	135.0	3.6	36.4	1.4	10.1	358.5
1984	7.2	9.4	1.6	3.6	78.6	3.1	103.4	4.6	24.7	103.7	34.1	183.6	2.8	61.7	1.6	11.6	431.1
1985	3.9	7.4	1.7	1.4	95.5	2.6	112.5	4.8	25.9	130.4	26.4	212.0	4.2	64.5	1.6	13.1	485.0
1986	4.2	6.5	1.3	4.3	80.0	1.6	97.9	3.6	29.9	98.1	70.2	198.4	4.5	49.5	1.7	14.0	472.2
1987	3.8	5.1	1.2	5.3	74.1	3.0	92.6	3.6	25.5	98.4	66.7	189.1	3.4	48.6	1.7	10.3	449.7
1988	4.3	5.6	.8	2.1	31.2	.8	44.8	3.6	24.7	49.5	18.0	70.5	4.9	15.6	1.2	16.1	205.5
1989	7.6	8.7	1.0	6.0	66.0	2.9	92.2	4.9	34.7	96.9	85.0	174.0	4.9	45.1	1.0	41.7	489.7
1990[1]	4.1	5.3	1.3	4.0	103.7	3.2	121.7	2.8	29.7	134.8	56.4	277.2	3.1	67.2	1.2	12.6	585.9

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.735

Wheat Under Price Support Through the End of the Month (Cumulative Total from Current Season's Crop) In Millions of Bushels

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1981–2	84.6	164.4	254.8	296.1	314.1	344.7	392.3	411.7	427.4	443.3	444.5	445.8	
1982–3	106.7	206.5	335.2	414.0	467.2	501.1	579.1	606.1	629.4	638.6	640.9	643.4	
1983–4	196.3	335.2	357.5	462.8	494.7	520.4	571.5	595.4	619.2	627.5	629.1	630.3	
1984–5	48.8	104.9	195.5	213.4	225.6	237.7	263.5	270.2	275.7	279.7	280.1	280.8	
1985–6	269.5	414.2	567.7	679.0	714.3	740.7	786.2	803.8	813.5	825.0	827.3	828.1	
1986–7	81.7	155.7	274.6	400.5	441.6	456.0	487.9	500.7	505.6	512.6	513.5	513.4	513.4
1987–8	—	105.1	259.6	350.4	396.7	418.2	442.8	460.2	466.5	470.7	472.0	472.1	472.2
1988–9	—	60.0	85.9	91.3	94.1	99.3	103.6	104.7	105.7	106.2	106.3	106.3	106.3
1989–90	—	42.7	69.7	82.1	89.7	97.6	104.6	107.5	111.7	113.3	113.4	113.4	113.4
1990–1	36.7	113.0	219.8										

Source: Economic Research Service, U.S.D.A. T.729

United States Grindings of Wheat by Mills In Millions of Bushels (of 60 Pounds Each)

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1981–2	51.2	53.3	54.6	55.6	51.0	50.2	54.8	53.9	57.8	51.4	50.0	51.2	635.0
1982–3	53.4	57.0	55.4	57.5	54.9	55.9	55.7	53.6	60.1	54.8	59.1	57.7	675.1
1983–4	56.2	66.1	62.9	59.4	57.2	56.0	55.7	57.5	58.4	54.0	60.1	54.6	698.1
1984–5	51.8	59.2	55.2	58.7	56.6	53.4	56.7	57.4	58.8	55.3	58.1	53.9	675.1
1985–6	54.6	60.9	59.5	65.1	63.7	56.0	60.0	59.2	54.6	57.0	58.6	57.6	706.8
1986–7	60.0	65.4	65.9	69.2	65.8	64.1	59.3	60.2	62.7	62.8	66.1	64.2	765.7
1987–8	62.3	66.3	65.8	69.5	66.7	62.5	59.6	58.4	61.2	58.0	65.7	63.8	759.8
1988–9	63.6	70.0	66.0	70.0	69.7	63.8	65.0	60.8	60.4	60.7	64.7	59.6	773.3
1989–90[1]	58.5	70.6	63.6	67.4	65.1	58.7	63.4	64.0	66.7	61.6	63.6	60.6	763.8
1990–1[1]	62.3	74.4	67.1	74.7									

[1] Preliminary. *Source: Bureau of the Census*

T.744

Comparative Average Cash Wheat Prices In Dollars per Bushel

Crop Year— June to May	Received by U.S. Farmers	No. 2 Soft Red Winter Chicago	No. 1 Hd. Red Ordin. Protein Kansas City	No. 2 Soft Red Winter St. Louis	— Minneapolis — No. 1 Dark Northern Spring 14%	No. 1 Hard Amber Durum	No. 1 Soft Portland Oregon	No. 2 Western White Pacific N.W.	No. 2 Soft White Toledo	— Export Prices[2] (U.S. $ per Metric Ton) — Australia Std. White	Canada Vanc. No. 1 CWRS 13½%	Argentina F.O.B. B.A.	U.S. Gulf No. 2 H.W.	Rotterdam C.I.F. U.S. No. 2 Hd. Winter
1982–3	3.45	3.32	3.94	3.32	4.09	4.25	4.39	3.93	3.33	160	165	166	161	187
1983–4	3.51	3.56	3.84	3.62	4.30	4.83	3.95	3.58	3.48	161	169	138	158	185
1984–5	3.39	3.51	3.74	3.57	4.06	4.44	3.82	3.44	3.42	153	166	135	153	180
1985–6	3.08	3.22	3.28	3.26	3.94	4.07	3.72	3.34	3.12	141	173	106	137	169
1986–7	2.42	2.76	2.72	2.87	3.07	3.57	2.90	2.58	2.66	120	161	88	117	148
1987–8	2.57	2.89	2.96	2.95	3.15	4.13	3.06	2.74	2.94	115	134	89	114	141
1988–9	3.72	4.00	4.17	4.08	4.36	5.53	4.53	4.14	3.90	150	177	125	146	176
1989–90[1]	3.72	3.92	4.22	3.96	4.16	4.25	4.31	3.88	3.80	176	202	151	171	190
1990–1[1]										149	158	107	137	164

[1] Preliminary. [2] Calendar year. *Source: Economic Research Service, U.S.D.A.*

T.733

Wheat Government Loan Program Data in the United States Loan Rates (Cents Per Bushel)

Crop Year Beginning June	Total Support Rate	National Avg.[1]	Target Rate	Corn Belt (Soft Red Winter)	Central & So. Plains (Hard Winter)	No. Plains (Spr. & Dur.)	Pacific North-West (White)	Placed Under Loan	% of Production	Acquired By CCC Under Program	Delivered To CCC	Stocks Ending May 31 — Total Stocks	Total CCC Stocks	— Outstanding — CCC Loans	Farmer-Owned Reserve	"Free"
								Millions of Bushels								
1980–1	363	300	363	300	294	302	308	331	14.0	—	—	989.1	199.7	54.6	359.6	375.2
1981–2	381	320	381	320	313	321	329	452	16.1	13	61.1	1,159	190.3	112.0	560.4	296.7
1982–3	405	355	405	356	347	357	365	646	23.0	148	9.3	1,515	192.0	65.2	1,060.6	197.3
1983–4	430	365	430	366	356	368	375	635	26.2	220	192.0	1,399	188.0	379.1	611.2	220.3
1984–5	438	330	438	328	323	334	343	285	10.9	244		1,425	377.6	175.0	657.1	215.5
1985–6	438	330	438	328	323	334	343	842	34.7	288		1,905	601.7	677.7	596.4	29.2
1986–7	438	240	438	236	235	244	250	514	24.5	473		1,821	830.1	235.6	631.8	123.4
1987–8	438	228	438	235	282	228	239	472	22.4	147		1,261	283.0	177.5	466.8	333.5
1988–9	423	221	423	233	221	221	232	106	5.9	45		701.6	190.5	19.2	287.0	204.9
1989–90[2]	410	206	410	214	204	206	217					536.5	116.6	30.0	143.9	246.0
1990–1[3]	400	195	400									982	170			

[1] The national average loan rate at the farm as a percentage of the parity-priced wheat at the beginning of the marketing year. [2] Preliminary. [3] Estimate. *Source: Agricultural Marketing Service, U.S.D.A.*

T.741

Exports of Wheat (Only) from the United States In Millions of Bushels

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Total
1984–5	105.4	133.3	146.2	242.7	137.3	97.3	131.9	106.4	85.5	58.0	67.8	56.6	1,368.4
1985–6	84.3	63.9	86.9	72.2	85.7	82.4	61.9	70.1	70.9	66.2	56.4	46.2	846.9
1986–7	79.5	104.7	114.9	98.2	84.8	59.2	53.8	65.0	67.8	65.5	65.4	64.6	923.4
1987–8	119.8	157.7	112.8	119.9	101.7	71.2	113.6	140.2	144.0	149.1	152.8	147.7	1,530.5
1988–9	121.8	111.5	107.6	127.6	93.2	93.3	100.1	115.8	127.2	141.8	115.9	91.6	1,347.4
1989–90	90.8	138.0	132.0	150.7	89.3	68.7	81.8	78.3	87.7	104.9	84.6	71.6	1,178.5
1990–1[1]	88.3	80.8	92.7	106.0	83.9	77.3	56.4						

[1] Preliminary. *Source: Department of Commerce*

T.738

WHEAT

United States Wheat and Wheat Flour Imports and Exports In Thousands of Bushels

Year Beginning June	Imports: Wheat: Suitable for Milling	Imports: Wheat: Unfit for Human Consumption	Imports: Flour (Wheat Equivalent)	Imports: Other Pdt's.[2] (Wheat Equivalent)	Imports: Total	Exports: Public Law 480: Sales for Foreign Currency[3]	Exports: Public Law 480: Long-Term $ & Conver. for Cur. Credit Sales	Exports: Public Law 480: Gov't. to Gov't. Donations[4]	Exports: Public Law 480: Donations Thru Voluntary Relief Agencies	Exports: Foreign Donations Sec. 416	Exports: Mutual Security (A.I.D.)[5]	Exports: Total Specified Gov't. Programs
1981–2	59	14	357	2,423	2,853	—	110,046	14,312	8,614	—	—	132,972
1982–3	3,901	35	624	3,036	7,596	—	113,322	22,081	8,724	—	6,805	150,932
1983–4	67	10	336	3,425	3,839	—	120,670	19,114	17,117	—	—	156,901
1984–5	4,825	3	329	4,285	9,442	—	151,605	23,188	8,930	—	2,726	186,449
1985–6	11,340	71	475	4,405	16,292	—	134,159	18,865	7,101	1,849	17,124	179,098
1986–7	14,833	979	411	4,917	21,140	3,953	150,840	9,597	5,831	15,413	28	185,662
1987–8[1]	9,020	969	756	5,342	16,087	3,181	111,996	14,804	16,119	44,173	10,713	200,986

[1] Preliminary. [2] Includes macaroni, semolina & similar pdt's. [3] Authorized by title. I, P.L. 480. [4] Author. by title II, P.L. 480. [5] Foreign Assist. Act of 1961. *Source: Economic Research Service, U.S.D.A.* T.732

Wheat Stocks in the United States In Millions of Bushels

Year	On Farms: Mar. 1	On Farms: June 1	On Farms: Sept. 1	On Farms: Dec. 1	Off Farms: Mar. 1	Off Farms: June 1	Off Farms: Sept. 1	Off Farms: Dec. 1	Total Stocks: Mar. 1	Total Stocks: June 1	Total Stocks: Sept. 1	Total Stocks: Dec. 1
1985	N.A.	582.1	N.A.	N.A.	N.A.	843.2	N.A.	N.A.	1,800.8	1,425.2	3,203.5	2,643.4
1986	N.A.	681.1	1,293.0	1,063.0	N.A.	1,223.9	1,861.6	1,610.5	2,255.8	1,905.0	3,154.6	2,673.5
1987	794.0	560.0	1,168.0	971.0	1,456.4	1,260.9	1,820.5	1,534.3	2,250.4	1,820.9	2,988.5	2,505.3
1988	748.0	525.0	798.0	620.0	1,175.5	735.8	1,455.6	1,095.9	1,923.5	1,260.8	2,253.6	1,715.9
1989[1]	463.0	289.0	832.0	592.0	764.7	412.6	1,086.0	830.5	1,227.7	701.6	1,918.0	1,422.5
1990[1]	376.0	212.5	1,000.0	762.0	567.1	324.0	1,409.5	1,147.5	943.1	536.5	2,409.5	1,909.5
1991												

[1] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.731

Commercial Stocks of Domestic Wheat[1] in the United States, at First of Month In Millions of Bushels

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1983–4	285.0	403.1	462.1	477.0	442.0	385.4	334.9	294.9	273.0	255.1	236.6	212.4
1984–5	265.2	423.0	413.7	409.4	387.8	352.8	309.9	268.0	248.5	239.8	215.1	221.4
1985–6	312.5	434.8	474.8	510.9	504.2	473.9	446.3	435.7	413.0	400.3	399.0	407.2
1986–7	437.5	483.7	494.7	475.9	472.7	445.0	435.0	420.0	410.1	393.3	381.1	366.8
1987–8	417.8	436.5	443.7	451.9	439.9	421.4	387.1	361.1	302.6	261.2	235.6	203.7
1988–9	291.6	334.2	342.4	340.8	331.1	297.2	293.7	266.5	213.3	181.1	150.1	114.4
1989–90	130.5	171.6	211.7	211.8	196.0	180.2	164.2	150.4	127.9	109.7	87.2	77.8
1990–1	121.8	212.7		290.2	284.6		243.7	237.7				

[1] Domestic wheat in store in public and private elevators in 39 markets and wheat afloat in vessels or barges at lake and seaboard ports, the first Saturday of the month. *Source: Department of Agriculture* T.746

Average of All Wheat Futures Contracts at Chicago,[1] K.C. & Mpls. In Thousands of Bushels

Year	Chicago[1]: Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Kansas City[2]: Jan.
1984	304,018	295,283	283,019	289,316	257,349	238,402	229,909	256,761	215,190	207,634	227,782	211,438	89,401
1985	206,892	191,587	173,737	190,077	194,039	197,308	186,000	196,731	170,237	169,586	149,812	152,746	95,317
1986	165,634	160,985	162,241	176,466	178,596	187,200	177,405	173,918	173,247	183,853	152,193	125,838	71,056
1987	128,805	137,113	147,187	154,030	160,892	175,160	176,293	200,085	199,244	194,362	163,349	152,801	66,850
1988	192,824	209,322	206,533	217,011	209,546	283,122	283,710	280,121	342,077	372,677	348,955	313,480	112,972
1989	334,519	315,770	323,343	308,643	301,955	349,492	335,590	327,315	307,555	261,229	260,113	270,586	156,530
1990	271,124	281,973	284,920	257,741	283,120	319,096	322,882	298,960	286,186	291,155	279,248	235,303	142,888
1991	242,983	256,993											128,872

[1] Chicago Board of Trade. [2] Kansas City Board of Trade. *Source: Commodity Futures Trading Commission* T.748

Wheat Supply and Distribution in Canada, Australia and Argentina In Millions of Metric Tons

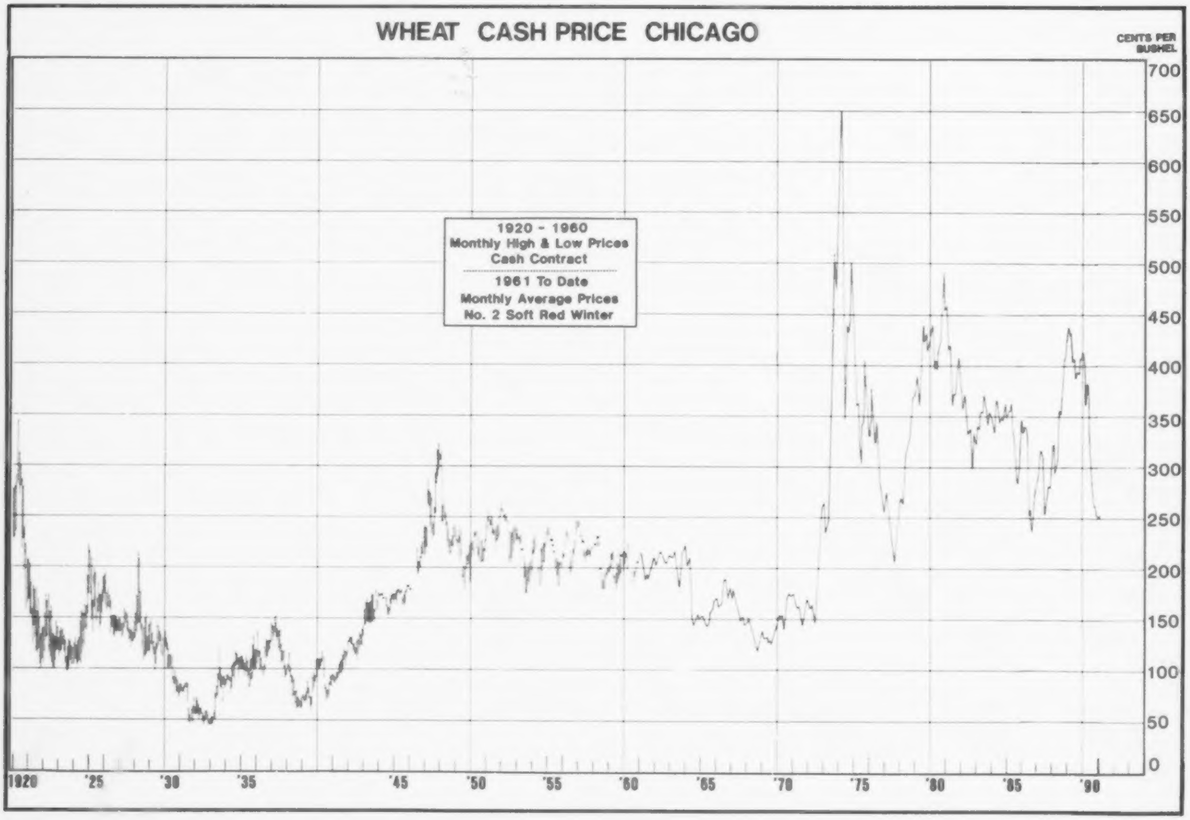
	Canada (Yr. Beg. Aug. 1)					Australia (Yr. Beg. Oct. 1)					Argentina (Yr. Beg. Dec. 1)				
	Supply			Disappearance		Supply			Disappearance		Supply			Disappearance	
Crop Year	Stocks Aug. 1	New Crop	Total Supply	Domestic	Exports[1]	Stocks Oct. 1	New Crop	Total Supply	Domestic	Exports[1]	Stocks Dec. 1	New Crop	Total Supply	Domestic	Exports[1]
1981–2	8.6	24.8	33.4	5.2	18.4	2.0	16.4	18.4	2.6	11.0	.4	8.3	8.7	4.3	3.6
1982–3	9.7	26.7	36.4	5.1	21.4	4.8	8.9	13.7	4.1	7.3	.8	15.0	15.8	4.8	9.9
1983–4	10.0	26.5	36.5	5.5	21.8	2.3	22.0	24.3	3.4	13.3	1.1	12.8	13.9	4.7	7.8
1984–5	9.2	21.2	30.2	5.2	17.5	7.5	18.7	26.2	2.9	14.7	1.3	13.2	14.5	4.6	9.4
1985–6	7.6	24.3	31.9	5.6	17.7	8.6	16.2	24.8	2.9	16.0	.5	8.5	9.0	4.4	4.3
1986–7	8.6	31.4	40.0	6.4	20.8	5.9	16.1	22.0	2.6	15.6	.3	8.9	9.2	4.5	4.4
1987–8	12.7	26.0	38.7	7.9	23.5	3.8	12.4	16.2	3.5	9.9	.2	8.8	9.0	4.5	3.7
1988–9	7.3	16.0	23.3	5.8	12.4	2.8	14.1	16.9	2.8	11.4	.8	8.4	9.2	4.7	4.0
1989–90	5.0	24.6	29.6	5.7	17.4	2.6	14.1	16.7	3.1	10.8	.5	10.2	10.7	4.6	5.9
1990–1[2]	6.5	31.8	38.3	5.7	18.0	2.9	15.5	18.4	3.3	11.0	.1	12.0	12.1	4.7	6.9
1991–2[3]	14.6					4.1					.5				

[1] Including flour. [2] Preliminary. [3] Forecast. *Source: Foreign Agricultural Service, U.S.D.A.* T.725

United States Wheat Quarterly Supply and Disappearance In Millions of Bushels

	Supply				Disappearance							Ending Stocks		
					Domestic Use									
Year & Begin. June 1	Beginning Stocks	Production	Imports[2]	Total Supply	Food	Alc. Beverages	Seed	Feed & Residual	Total	Exports[2]	Total Disappearance	Gov't. Owned[4]	Privately Owned[5]	Total Stocks
1983–4	1,515	2,420	3.8	3,939	642.6	—	100.0	371.2	1,114	1,426	2,540	188.0	1,211	1,399
June–Aug.	1,515	2,420	.7	3,936	158.7	—	1.0	196.1	355.8	346.7	702.5	365.0	2,868	3,233
Sep.–Nov.	3,233	—	.9	3,234	163.1	—	75.0	100.5	338.6	359.7	698.3	375.8	2,160	2,536
Dec.–Feb.	2,536	—	1.1	2,537	166.8	—	3.0	48.3	218.1	367.1	585.3	313.8	1,638	1,952
Mar.–May	1,952	—	1.1	1,953	154.0	—	21.0	26.2	201.2	352.8	554.0	188.0	1,211	1,399
1984–5	1,399	2,595	9.4	4,003	651.0	—	98.0	407.1	1,156	1,421	2,578	377.6	1,048	1,425
June–Aug.	1,399	2,595	3.8	3,997	157.8	—	1.0	279.6	438.4	398.7	837.1	278.1	2,882	3,160
Sep.–Nov.	3,160	—	2.2	3,162	168.5	—	69.0	101.5	339.0	484.8	823.8	359.4	1,979	2,339
Dec.–Feb.	2,339	—	1.1	2,340	164.2	—	4.0	35.5	203.7	335.1	538.8	375.7	1,415	1,801
Mar.-May	1,801	—	2.3	1,803	160.5	—	24.0	-9.5	175.0	202.9	377.9	377.6	1,048	1,425
1985–6	1,425	2,424	16.3	3,866	674.3	—	93.0	284.2	1,052	909.1	1,961	601.7	1,303	1,905
June–Aug.	1,425	2,424	5.1	3,855	165.8	—	1.0	235.9	402.8	249.1	651.9	406.7	2,797	3,204
Sep.–Nov.	3,204	—	5.1	3,209	185.6	—	63.0	63.7	312.3	252.9	565.2	517.1	2,126	2,643
Dec.–Feb.	2,643	—	2.7	2,646	162.2	—	4.0	– .2	165.9	224.4	390.3	526.3	1,730	2,256
Mar.–May	2,256	—	3.5	2,259	160.8	—	25.0	–20.5	165.3	189.0	354.3	601.7	1,303	1,905
1986–7	1,905	2,091	21.3	4,017	712.2	—	84.0	401.2	1,197	998.5	2,196	830.1	990.8	1,821
June–Aug.	1,905	2,091	4.3	4,001	169.0	—	1.0	353.8	523.8	320.6	844.4	793.8	2,363	3,157
Sep.–Nov.	3,157	—	3.6	3,160	185.9	—	57.0	–19.6	223.3	263.4	486.7	863.9	1,810	2,674
Dec.–Feb.	2,674	—	5.9	2,679	168.0	—	3.0	55.3	226.3	202.7	429.0	905.3	1,345	2,250
Mar.–May	2,250	—	7.3	2,258	174.7	—	23.0	22.3	220.0	216.8	436.8	830.1	990.8	1,821
1987–8	1,821	2,108	16.1	3,945	720.7	—	85.0	280.3	1,086	1,598	2,684	283.0	977.8	1,261
June–Aug.	1,821	2,108	2.7	3,931	181.1	—	1.0	362.7	544.7	409.9	954.6	798.8	2,190	2,977
Sep.–Nov.	2,977	—	4.5	2,981	193.1	—	58.0	–79.2	171.9	308.5	480.4	755.4	1,751	2,501
Dec.–Feb.	2,501	—	3.7	2,504	170.8	—	3.0	– 6.2	167.6	413.1	580.8	450.1	1,473	1,924
Mar.–May	1,924	—	5.1	1,929	181.6	—	23.0	2.7	207.3	460.6	667.8	283.0	977.8	1,261
1988–9	1,261	1,812	22.6	3,096	714.5	—	103.0	157.4	974.9	1,419	2,394	190.5	511.1	701.6
June–Aug.	1,261	1,812	8.6	3,082	183.3	—	1.0	282.2	466.4	361.6	828.1	250.0	2,004	2,254
Sep.–Nov.	2,254	—	6.3	2,260	197.3	—	67.0	–49.4	214.9	329.0	543.9	213.0	1,503	1,716
Dec.–Feb.	1,716	—	3.7	1,720	168.9	—	3.0	–40.6	131.3	360.5	491.9	203.2	1,025	1,228
Mar.–May	1,228	—	4.1	1,232	165.0	—	32.0	–34.8	162.2	368.0	530.2	190.5	511.1	701.6
1989–90[1]	701.6	2,037	23.4	2,762	731.0	—	101.1	160.1	992.2	1,233	2,225	117.0	419.5	536.5
June–Aug.	701.6	2,037	5.9	2,744	183.1	—	1.7	272.2	457.0	369.9	826.9	167.9	1,749	1,917
Sep.–Nov.	1,917	—	5.3	1,923	183.1	—	68.4	–81.2	170.3	328.6	498.9	154.5	1,269	1,424
Dec.–Feb.	1,424	—	4.7	1,428	180.5	—	2.7	42.3	225.5	259.7	485.2	136.5	806.6	943.1
Mar.–May	943.1	—	7.5	950.6	184.3	—	28.3	–73.2	139.4	274.8	414.2	117.0	419.5	536.5
1990–1[3]	536.5	2,744	23.0	3,303	745.0	—	88.0	450.0	1,283	1,075	2,358	147.0	798.0	945.0
June–Aug.	536.5	2,744	8.0	3,288	197.4	—	1.0	419.6	618.0	268.1	886.1	104.6	2,297	2,402
Sep.–Nov.														

[1] Preliminary. [2] Imports & exports include flour and other products expressed in wheat equivalent. [3] Forecast. [4] Uncommitted, Gov't. only. [5] Includes total loans. [6] Less than 50,000 bushels. *Source: Economics Research Service, U.S.D.A.* T.740



Average Price of No. 2 Soft Red Winter (30 Days) Wheat at Chicago In Dollars per Bushel

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
1979–0	4.36	4.39	4.23	4.28	4.30	4.13	4.26	4.36	4.39	4.18	3.96	4.04	4.24
1980–1	3.96	4.17	4.21	4.38	4.70	4.92	4.54	4.57	4.34	4.15	4.18	3.80	4.33
1981–2	3.60	3.70	3.70	3.87	3.97	4.08	3.86	3.77	3.57	3.59	3.70	3.43	3.74
1982–3	3.31	3.36	3.35	3.18	2.98	3.33	3.23	3.32	3.40	3.36	3.51	3.55	3.32
1983–4	3.53	3.59	3.71	3.62	3.56	3.42	3.55	3.47	3.34	3.57	3.65	3.65	3.56
1984–5	3.51	3.44	3.49	3.47	3.51	3.62	3.49	3.51	3.55	3.58	3.63	3.34	3.51
1985–6	3.27	3.09	2.87	2.83	3.04	3.33	3.46	3.34	3.37	3.40	3.39	3.25	3.22
1986–7	2.52	2.58	2.44	2.36	2.57	2.73	2.76	2.87	2.91	3.11	3.16	3.08	2.76
1987–8	2.63	2.54	2.61	2.77	2.82	2.80	3.00	3.23	3.23	2.94	3.02	3.13	2.89
1988–9	3.56	3.52	3.61	3.84	4.07	4.09	4.25	4.39	4.30	4.31	4.04	4.07	4.00
1989–90	3.87	3.92	3.94	3.93	4.07	4.07	4.13	4.03	3.92	3.61	3.83	3.71	3.92
1990–1	3.26	3.04	2.83	2.62	2.62	2.53	2.52						

Source: Agricultural Marketing Service, Grain Division, U.S.D.A. T.745

Stocks of Wheat Flour Held by Mills in the United States In Thousands of Sacks (100 Pounds)

Year	Jan. 1	April 1	July 1	Oct. 1	Year	Jan. 1	April 1	July 1	Oct. 1
1982	3,460	3,384	3,744	3,563	1987	5,228	4,900	5,581	5,258
1983	4,276	3,760	3,490	3,599	1988	5,858	4,508	4,822	5,303
1984	3,805	3,780	3,763	3,833	1989[1]	4,800	4,423	5,116	5,489
1985	4,230	4,363	5,040	5,052	1990[1]	5,207	5,072	5,818	6,205
1986	4,847	4,740	5,141	5,101	1991				

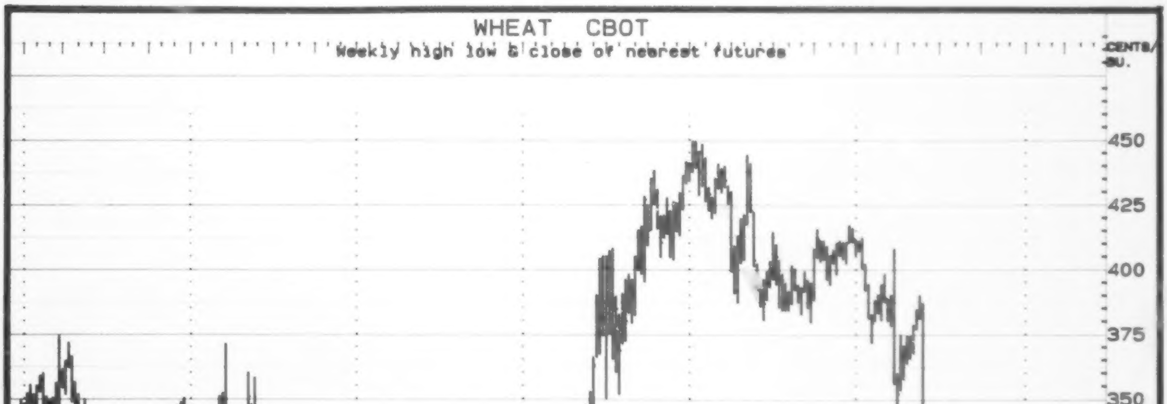
[1] Preliminary. *Source: Department of Commerce* T.755

High, Low & Closing Prices of May Wheat Futures on the Chicago Board of Trade In Cents per Bushel

Year of Delivery		Year Prior to Delivery									Delivery Year					Life of Delivery
		Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	Range
1984	High	415	403	388	401¼	441	432	392½	376	365½	359	333¾	375	380	397	441
	Low	396	380¼	375¾	372½	397	386	364¾	347½	347	329¾	324½	330	349½	348½	324½
	Close	399	380¼	379½	398	431¼	390½	369½	355	360½	334	331¼	374	350¾	396½	—
1985	High	383½	405	392½	387	388	363	363½	362½	349¼	347¾	350	361¼	371½	349½	405
	Low	372	367¼	373½	369	355¼	350	351¼	347¼	334½	332½	333¾	335½	345	319¾	319¾
	Close	372	390½	385½	381½	357	353¾	361	349	341	343½	336¼	356½	349	320¾	—
1986	High	350	338¼	328¾	316	305	303	315	319½	326½	320½	294	312	328	360	360
	Low	335	316	314	286½	284	286½	294½	305¼	308½	281	274	285¼	275½	300	274
	Close	338¼	316	314	291¾	291½	300	311½	311¼	321	288¼	286¼	304¼	328	358	—
1987	High	283	300	255¼	250	253	250½	261½	267	269½	274	282	292½	290½	329	329
	Low	244	248	239	233¼	241½	237	244	252½	258	254½	263	278	273½	287¼	233¼
	Close	283	249	239	245¼	246½	244¼	255½	267	260¾	271¼	280	284½	289	295½	—
1988	High	276½	315	288½	282	296¾	302	318	317	319¼	334½	339	324¼	320½	341½	341½
	Low	264½	276	268	263	276½	280½	293	293	304¼	308	318	295½	298	294¾	263
	Close	275	281	268	278	282½	290	304	316¼	307½	327	323½	299¼	304½	336	—
1989	High	349	370	408	420	394	413½	416	417	430½	440	436	445	421	444	445
	Low	335½	330	365	348	367	390½	396	397	398	418	417½	399	387	401	330
	Close	338½	370	398	363	391	394	403	412½	426	435	434¾	403¾	417½	403¼	—
1990	High	423	431	414	412	408½	393½	391	395¾	393½	390	369½	363	374¾	340	431½
	Low	403½	400	398	381	384½	370	376	379	380½	361	359½	347	353¼	367½	347
	Close	442½	403¾	405	392¼	390½	379	379¾	390	387¾	362¾	362¼	351¾	374¼	383½	—
1991	High	362½	373	361	356	320	304¼	300½	292¾	276						
	Low	352	345	347½	314	295½	291	281¼	264½	266						
	Close	357½	354	348½	314½	295½	299	285¼	269½	266½						

Source: Chicago Board of Trade

T.750



WHEAT

Average Price of No. 1 Hard Red Winter (Ordinary Protein) Wheat, at Kansas City In Cents per Bushel

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
1983–4	392	371	388	390	384	382	385	381	371	385	393	389	384
1984–5	380	367	380	389	386	385	376	376	374	367	362	342	374
1985–6	338	317	303	307	315	335	342	332	330	336	345	340	328
1986–7	280	250	248	253	260	268	268	270	280	290	290	302	272
1987–8	270	259	265	278	290	290	310	320	328	310	314	320	296
1988–9	379	377	378	403	413	418	425	440	437	432	446	455	417
1989–90	444	428	424	418	428	436	439	430	413	404	413	391	422
1990–1	360	311	289	283	281	278	278						

Source: Agricultural Marketing Service, U.S.D.A. T.739

Average Price of No. 1 Dark Northern Spring Wheat at Minneapolis (14% Protein) In Cents per Bushel

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
1983–4	439	438	434	433	433	425	421	417	408	424	437	445	430
1984–5	445	434	407	397	403	402	392	390	392	394	436	402	406
1985–6	399	377	356	376	391	409	416	397	390	400	417	403	394
1986–7	317	300	286	285	298	309	304	308	313	319	317	324	307
1987–8	307	294	294	304	315	311	313	324	332	315	330	342	315
1988–9	432	423	424	432	433	422	426	444	440	456	447	455	436
1989–90	441	436	418	408	411	412	423	421	406	396	408	409	416
1990–1	396	356	305	284	285	280	282	283					

Source: Agricultural Marketing Service, U.S.D.A. T.742

Average Price[1] Received by Farmers for Wheat in the U.S. In Cents per Bushel

Year	July	June	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average[2]
1983–4	350	334	361	365	360	354	348	350	340	349	363	366	351
1984–5	346	329	343	343	343	345	338	338	338	338	333	330	339
1985–6	309	293	289	301	310	322	325	319	316	328	337	301	308
1986–7	247	225	226	228	230	243	249	253	258	257	263	266	242
1987–8	244	232	236	253	262	269	270	275	279	274	279	297	257
1988–9	337	350	361	374	384	388	394	402	403	407	403	401	372
1989–90	385	378	374	372	375	372	379	371	356	348	349	340	372
1990–1	308	279	258	246	242	239	240	232					

[1] Weighted average by sales. [2] Includes an allowance for unredeemed loans at average loan values.
Source: Statistical Reporting Service, U.S.D.A. T.743

Average Producer Price Index of Wheat Flour (Spring[1]) June 1983 = 100

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
1984–5	99.5	96.9	96.9	97.3	97.7	96.8	98.2	98.7	98.3	100.3	97.0	96.3	97.8
1985–6	95.2	93.1	93.7	94.9	96.6	96.7	96.2	96.4	96.4	94.8	99.7	92.8	95.5
1986–7	87.9	87.0	85.4	86.9	86.8	86.9	87.0	89.1	89.2	89.8	93.5	90.1	88.3
1987–8	88.4	88.0	90.1	91.3	90.1	90.0	91.2	94.4	90.6	93.5	93.9	107.0	92.4
1988–9	107.0	107.7	110.0	110.5	109.0	109.1	110.7	110.0	112.4	109.5	112.0	112.7	110.1
1989–90	112.1	110.7	109.5	108.5	108.7	109.6	109.4	109.0	106.9	108.8	107.9	106.0	108.9
1990–1	99.7	93.4	91.8	90.8	89.3	89.9							

[1] Standard patent. *Source: Bureau of Labor Statistics* (0212–0301.99) T.758

World Wheat Flour Production In Thousands of Metric Tons

Year	Argentina	Australia[2]	Rep. of Korea	France	India[3]	Mexico	Israel	Japan	W. Germany	Egypt	Poland	South Africa	Turkey	Un. Kingdom	United States	Yugoslavia
1983	2,678	1,055	1,476	4,386	3,092	2,435	506	4,356	2,280	3,686	2,539	694	1,582	3,420	13,883	2,414
1984	2,851	1,138	1,547	4,632	3,335	2,446	516	4,439	3,500	3,707	2,645	727	1,481	3,604	13,600	2,350
1985	2,899	1,159	1,612	4,284	3,430	2,366	508	4,402	3,523	3,598	2,645	564	1,490	3,648	14,234	2,411
1986	2,856	1,178	1,596	4,922	3,720	2,126	529	4,534	3,415	3,731	2,498	520	1,518	3,700	14,801	2,323
1987	2,470	1,217	1,613	5,021	3,526	2,256	529	4,496	3,449	3,704	2,723	577	1,596	3,829	15,354	2,282
1988[1]	N.A.	1,280	1,692	5,203	4,360	2,400	528	4,465	3,611	N.A.	2,836	650	1,334	3,956	15,601	2,206
1989[3]		1,360	1,614	5,227	4,696	2,504	524	4,541	3,576			888	1,637	3,919	15,849	2,484

[1] Preliminary. [2] Twelve months ending June 30 of the year stated. [3] Estimate. *Source: United Nations* T.752

United States Wheat Flour Production In Millions of Sacks (100 Pounds Each)

Year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1982–3	23.6	25.2	24.7	25.5	24.4	25.0	24.9	23.8	27.3	24.6	26.2	25.5	300.7
1983–4	25.1	29.4	27.9	26.6	25.4	24.9	24.8	25.5	25.9	24.1	26.6	24.3	310.5
1984–5	22.8	26.0	24.4	26.3	25.3	23.8	25.6	25.6	26.4	24.7	26.2	24.1	301.2
1985–6	24.3	27.3	26.8	29.1	28.4	25.2	26.6	26.3	24.5	25.3	26.0	25.5	268.4
1986–7	26.4	28.9	29.1	30.4	28.9	28.2	26.3	26.6	28.0	26.9	29.2	28.7	241.0
1987–8	27.6	30.1	29.3	31.3	29.8	28.0	26.5	26.5	27.1	26.0	29.2	28.6	340.0
1988–9	28.5	31.4	29.4	31.3	31.1	28.5	29.1	27.1	27.0	27.2	28.6	26.6	345.8
1989–90	26.6	32.3	29.8	31.8	30.0	27.8	27.9	28.0	29.2	27.0	27.6	26.7	344.7
1990–91[1]	27.7	33.4	29.8	33.1									

[1] Preliminary. *Source: Bureau of the Census* T.754

United States Wheat Flour Exports (grain equivalent[2]) In Thousands of Bushels

Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Total
1983/84	9,611	8,198	7,849	8,801	8,473	3,504	1,245	2,330	2,344	7,066	7,306	8,148	74,875
1984/85	6,614	4,105	1,166	1,596	3,242	633	941	392	6,297	5,148	6,335	4,020	40,489
1985/86	3,640	2,638	1,638	1,038	1,289	2,902	6,680	3,174	5,521	5,157	6,411	2,381	42,469
1986/87	5,104	4,795	6,675	4,731	5,999	2,332	6,664	6,681	3,676	6,173	6,722	6,365	65,918
1987/88	5,450	6,816	4,749	3,999	3,418	6,746	4,316	6,934	2,556	10,776	2,463	2,520	60,743
1988/89	7,036	6,400	6,002	2,402	7,908	3,368	6,086	4,178	6,515	6,841	6,540	5,214	68,490
1989/90	907	1,897	5,775	8,915	3,579	6,817	3,606	4,943	3,124	4,466	6,132	3,289	53,450
1990/91[1]	1,139	2,244	2,785	2,865									

[1] Preliminary. [2] Includes meal, groats, and durum. *Source: U.S. Bureau of the Census.* T.756

Supply and Distribution of Wheat Flour in the United States In Thousands of Cwt.

Year	Wheat Ground 1,000 Bu.	Millfeed Production 1,000 Tons	Flour Production[1]	Flour & Product Imports[2]	Total Supply	Exports		Domestic Disappearance	Total Population July 1 Millions	Per Capita Disappearance Pounds
			1,000 Cwt.			Flour	Products[2]			
1982	653,206	5,228	290,907	1,496	292,403	20,926	154	271,323	232.5	117
1983	689,951	5,655	311,587	1,590	313,177	37,315	150	275,712	234.8	118
1984	675,271	5,426	299,832	2,005	301,837	19,933	160	281,744	237.0	119
1985	700,151	5,556	313,815	2,064	315,879	18,387	141	297,351	239.3	124
1986	737,537	5,799	326,316	2,226	328,542	25,842	123	302,577	241.6	125
1987	767,507	6,260	341,565	2,632	344,197	28,529	142	315,526	243.9	129
1988	769,699	6,163	344,154	2,696	346,850	28,169	182	318,499	246.3	129
1989[3]	778,519	6,153	344,379	3,303	347,682	26,357	182	321,143	248.8	129

[1] Commercial production of wheat flour, whole wheat, industrial and durum flour and farina reported by Bureau of Census. [2] Imports and exports of macaroni products (flour equivalent). [3] Preliminary. *Source: Economics & Statistics Service, U.S.D.A.* T.753

Wheat and Flour—Price Relationships at Milling Centers (In Dollars)

Crop Year (June-May)	At Kansas City					At Minneapolis				
		Wholesale Price of					Wholesale Price of			
				Total Products					Total Products	
	Cost of Wheat to Produce 100 lb. Flour[1]	Bakery Flour Per 100 lb.[2]	By-Products Obtained 100 lb. Flour[3]	Actual	Over Cost of Wheat	Cost of Wheat to Produce 100 lb. Flour[1]	Bakery Flour Per 100 lb.[2]	By-Products Obtained 100 lb. Flour[3]	Actual	Over Cost of Wheat
1981–2	9.81	10.37	1.57	11.94	2.13	9.80	10.67	1.41	12.08	2.28
1982–3	9.46	10.22	1.52	11.74	2.28	9.45	10.54	1.26	11.80	2.35
1983–4	9.45	9.99	1.83	11.69	2.37	9.80	10.75	1.59	12.34	2.54
1984–5	8.96	9.78	1.32	11.09	2.13	9.27	10.84	1.01	11.85	2.58
1985–6	8.28	9.28	1.19	10.47	2.20	9.05	11.39	.90	12.29	3.25
1986–7	6.54	8.06	.84	8.90	2.36	7.00	9.22	.63	9.85	2.85
1987–8	7.15	7.96	1.14	9.10	1.95	7.18	9.39	.89	10.28	3.10
1988–9	9.62	10.21	1.68	11.89	2.27	9.94	10.39	1.62	12.01	2.06
1989–90[4]	9.58	10.41	1.45	11.86	2.28	9.48	10.00	1.36	11.36	1.89
1990–1[4]										
June–Aug.	7.46	8.62	1.29	9.91	2.45	8.03	8.85	1.21	10.06	2.03
Sept.	6.59	7.50	1.35	8.85	2.27	6.48	6.95	1.31	8.26	1.78
Oct.	6.52	7.20	1.46	8.66	2.14	6.50	6.85	1.37	8.22	1.72

[1] Cost of 2.28 bushels. [2] Quoted as 95% patent at K.C. & standard patent at Minn., bulk basis. [3] Assumes 50–50 millfeed distribution between bran & shorts or middlings, bulk basis. [4] Preliminary. *Source: Economic Research Service, U.S.D.A.* T.751

Wool

Business in the domestic wool industry was slow in 1990, as mill use declined and imports were off sharply. Many U.S. firms that deal in wool were forced to cut costs and trim staffs. The wool carpet industry, which had been one of the bright spots, announced large layoffs. These developments came on the heels of a virtual boom in the domestic wool trade in the late 1980s.

Wool use by mills fell to an estimated 123 million pounds in 1990 from 127 million the previous year and was at a 5-year low, according to the USDA.

Imports, which are the major source of domestic supply and usually well above the country's production, were expected to slump to 67 million pounds from 107 million in 1989. Australia was the chief supplier of raw wool to the U.S., followed by New Zealand, the U.K., and Uruguay.

Domestic production increased slightly during 1990 and was forecast at 51 million pounds, versus 48 million a year earlier. The U.S. government supports the price of wool paid to sheep producers. The 1990 support price for shorn wool was $1.82 per pound, compared with $1.77 in 1989.

Wool output by Australia, the world's leading producer and exporter, was projected at 2.4 billion pounds in 1990/91 (July-June), down nearly 2 percent from the previous season, according to the Australian Bureau of Agricultural and Resource Economics. The number of sheep shorn was expected to rise slightly to 216 million. However, average fleece weight was likely to be down by 3 percent, as a result of dry conditions in some areas.

The Australian wool industry was perceived to be in a crisis, with supplies having outstripped export demand. The Australian Wool Corporation set a floor price for wool at 700 cents/kg. for the 1990/91 season, 20 percent below the previous level. The Corporation also raised the tax on sheep producers' gross sales in 1990/91 to 18 percent from 8 percent. Australian exports to major customers like China, Japan, and the USSR were off sharply in both 1990 and 1989. Because of weak demand, stocks at the end of the season were expected to climb to 4.7 million bales, 55 percent above the year-earlier level.

New Zealand's wool production was forecast to be 669 million pounds in 1990/91, 2 percent below the previous season. A lower clip per head and a switch by some sheep growers to cattle explained the decline. New Zealand had to discount its export prices in an effort to move supplies, and inventories were expected to rise as a result of soft demand.

In 1990, prices throughout the world wool market were influenced by the Australian Wool Corporation's move to lower its support levels. The price of fine wool in Boston began the year at $3.00 a pound and had fallen to $2.35 in late July. At year's end, fine wool was quoted at $2.20 per pound.

Futures Markets

Greasy merino wool futures are traded on the Sydney Futures Exchange, and New Zealand crossbred futures are traded in London.

World Production of Wool[3] In Thousands of Metric Tons (Greasy Basis)

Year	Brazil	Argentina	Australia	China	France	Morocco	India	New Zealand	Spain	Turkey	South Africa	United Kingdom	United States	Uruguay	USSR	World[1] Total
1981[2]	33	163	716	180	27	22	35	363	21	62	112	42	50	79	482	2,653
1982[1]			701					370							471	
1983[1]			672					370							474	

[1] Estimated. [2] Preliminary. [3] Includes shorn, pulled, & wool exported on skins. *Source: Foreign Agricultural Service, U.S.D.A.* T.760

Wool Goods[1] Production in the United States In Millions of Square Yards

Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total Year	Year	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total Year
1984	48.6	44.3	29.7	36.7	159.4	1989[2]	47.5	48.9	40.1	37.0	176.3
1985	40.6	39.5	24.3	34.0	138.3	1990[2]	38.8	38.8	32.3		
1986	37.7	38.8	27.3	30.2	134.1	1991					

[1] Woolen and worsted woven goods, except woven felts. [2] Preliminary. *Source: Bureau of Census* T.763

Price Received by Farmers for Shorn Wool (Greasy Basis) in the U.S. In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average[1]
1988	84.8	109.0	140.0	153.0	166.0	161.0	134.0	122.0	113.0	123.0	119.0	116.0	138.0
1989	109.0	131.0	133.0	135.0	136.0	134.0	121.0	112.0	115.0	147.0	102.0	94.0	124.0
1990[2]	65.8	70.6	83.4	92.6	99.5	93.4	80.4	74.4	71.9	83.5	58.0	48.2	76.8
1991[2]	38.2												

[1] Weighted average. [2] Preliminary. *Source: Crop Reporting Board, U.S.D.A.* T.765

Salient Statistics of Wool in the United States

Year	Sheep & Lambs Shorn[2] Ths.	Weight per Fleece Lbs.	Shorn Wool Production Ths. Lbs.	Price per Lb.	Value of Production Mil. $	Shorn Wool Support $ Per Lb.	Shorn Wool Payment Rate $ Per Lb.	Total Wool Production[4] Thousand Pounds	Apparel Wool (Clean Content) Domestic Prod.	Apparel Wool (Clean Content) Exports Domestic Wool	Apparel Wool (Clean Content) Dutiable Imports For Cons.[4]	Apparel Wool (Clean Content) Total New Supply[3]	Duty Free Raw Imports for Cons.	Mill Consumption Apparel	Mill Consumption Carpet
1982	13,199	8.04	106,129	68.6	72.8	137	68.6	106,129	56,036	1,351	39,9[illegible]	116,106	21,433	105,857	9,825
1983	12,865	8.00	102,886	61.2	63.0	153	91.7	102,886	54,324	1,014	49,3[illegible]	131,369	28,688	126,729	13,851
1984	12,284	7.77	95,471	79.5	75.9	165	85.5	95,471	50,409	488	63,271	144,097	30,905	128,982	13,088
1985	11,158	7.88	87,941	63.3	55.7	165	101.7	87,941	46,433	1,415	50,164	124,490	29,308	106,051	10,562
1986	10,852	7.82	84,829	66.8	56.6	178	111.2	84,829	44,790	788	66,090	140,993	30,901	126,768	9,960
1987	10,921	7.75	84,669	91.7	77.1	181	97.4	84,669	44.705	1,037	74,054	148,788	31,066	129,677	13,092
1988[1]	11,465	7.78	89,235	138.0	124.6	178	29.0	89,235	47,116	1,247	72,323	142,610	24,418	117,069	15,633
1989[5]	11,300	7.90	89,200	124.0	110.6			89,200	49,000	1,200	77,003		29,889	112,998	14,122
1990[5]	11,100		90,000	76.8				90,000	51,000	2,000	55,000		24,000	—125,000—	

[1] Preliminary. [2] Includes sheep shorn at commercial feeding yards. [3] Production minus exports plus imports; stocks not taken into consideration. [4] Apparel wool includes all dutiable wool; carpet wool includes all duty-free wool. [5] Estimate. *Sources: Economics Service, U.S.D.A.; Dept. of Commerce*

T.766

Consumption of Apparel Wool in the United States In Millions of Pounds (Clean Basis)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1982	9.4	9.6	12.9	9.2	8.3	9.4	5.9	8.0	8.4	7.2	7.8	9.6	105.9
1983	8.5	9.3	12.4	10.2	9.4	13.0	8.5	10.0	12.3	10.7	10.7	11.8	126.7
1984	10.6	12.0	14.0	11.3	11.9	13.0	8.2	9.9	11.2	8.5	8.9	9.4	129.0
1985	9.1	8.1	9.6	8.4	9.0	10.5	6.5	8.1	10.4	8.6	8.8	8.9	106.1
1986	11.9	10.6	10.0	12.7	10.2	10.8	11.3	9.4	9.4	11.1	9.3	10.1	126.8
1987	9.9	11.0	12.9	10.9	10.6	12.7	9.0	9.4	11.7	10.9	9.6	11.2	129.7
1988	9.1	9.2	12.6	9.3	8.7	12.1	9.1	8.8	9.5	9.2	8.3	11.2	117.1
1989[1]	10.6	11.1	13.7	10.4	8.7	11.9	[illegible]	9.7	10.8	9.4	7.8	9.1	113.0
1990[1]	——— 29.9 ———			——— 30.0 ———			——— 25.4 ———						

[1] Preliminary. *Source: Bureau of the Census*

T.767

Average Wool Prices[1]—Australian—64's, Type 62, Duty Paid—U.S. Mills In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1982	301	303	313	323	336	321	304	294	287	276	269	267	299
1983	273	271	266	266	262	262	260	262	263	271	270	266	266
1984	268	276	279	276	271	269	255	259	247	249	255	251	263
1985	246	233	236	227	234	229	230	226	224	224	217	222	229
1986	231	229	231	238	252	242	N.A	229	224	230	240	250	236
1987	252	259	288	325	327	335	332	373	341	348	347	356	324
1988	391	468	496	564	564	513	489	467	461	488	472	475	487
1989	511	484	454	429	414	403	405	410	414	417	417	420	431
1990	417	404	403	414	406	342	338	352	355	343	332	332	370

[1] Raw, clean basis. *Source: U.S. Dept. of Agriculture*

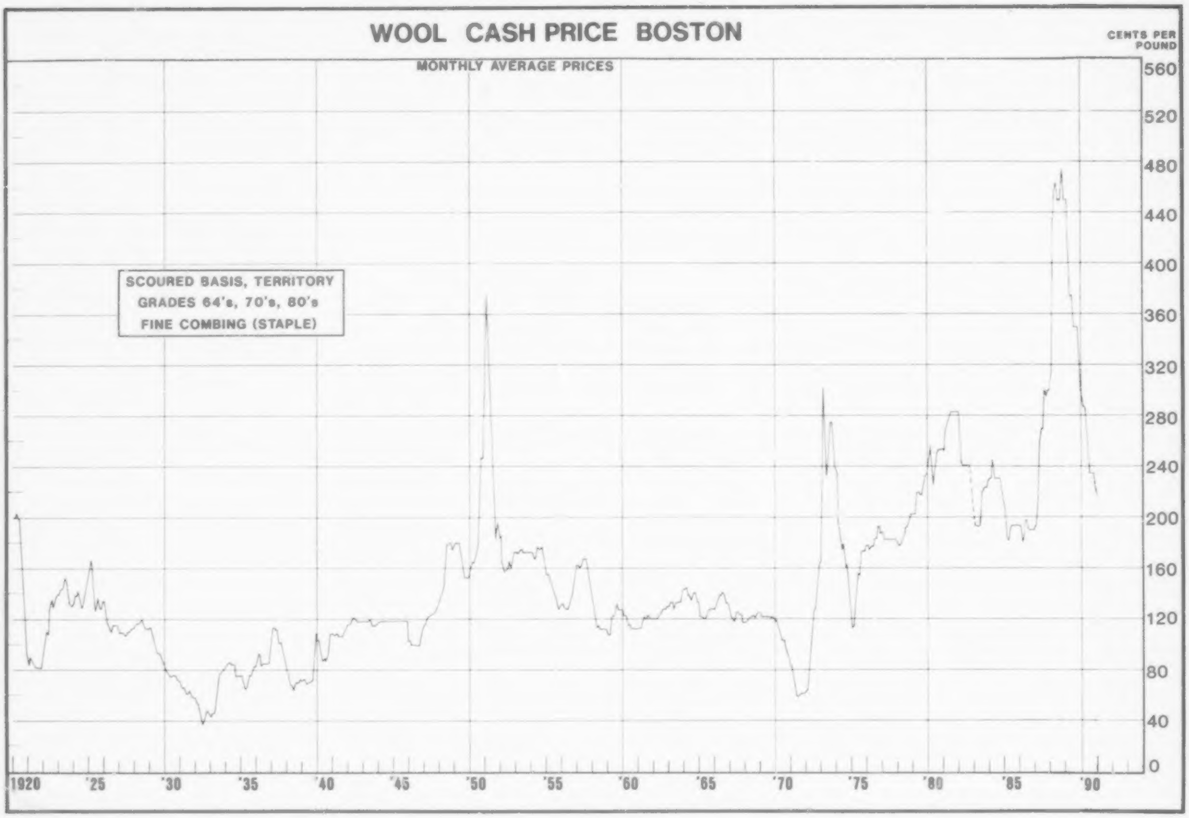
T.768

Average Wool Prices—Domestic[1]—Graded Territory, 64's, Staple 2¾" & Up—U.S. Mills ¢/Lb.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1982	275	263	244	240	240	240	240	240	240	—	—	—	247
1983	—	—	193	193	193	198	219	223	225	225	225	228	212
1984	230	230	230	245	234	230	230	230	230	221	218	214	228
1985	205	195	185	182	191	193	193	193	193	193	193	193	192
1986	193	189	180	188	198	198	193	190	190	190	190	190	191
1987	193	202	216	260	270	270	270	300	295	300	300	300	265
1988	315	397	435	453	463	460	450	450	450	463	475	450	438
1989	450	438	410	375	375	365	350	350	350	350	333	300	370
1990	294	287	287	284	275	257	242	235	235	235	225	220	256

[1] Raw, shorn, clean basis. *Source: U.S. Dept. of Agriculture*

T.769



WOOL CASH PRICE BOSTON

Wool: Mill Consumption, by Grades in the U.S., Scoured Basis In Millions of Pounds

	Apparel Wool[1]							
	Woolen System			Worsted System				
Year	60's & Finer	50's Up to 60's	Total	60's & Finer	Coarser Than 60's	Total	All Total	Carpet Wool[2]
1983	30.5	30.2	60.7	42.4	23.6	66.0	126.7	13.9
1984	32.9	32.2	65.2	39.7	24.1	63.8	129.0	13.1
1985	28.0	27.7	55.7	33.6	16.7	50.3	106.1	10.6
1986	34.1	32.2	66.3	41.7	18.8	60.5	126.8	10.0
1987	32.4	28.6	61.0	53.8	14.8	68.7	129.7	13.1
1988	23.8	20.9	44.6	54.6	17.9	72.4	117.1	15.6
1989[3]	24.1	21.8	45.9	50.4	16.7	67.1	113.0	14.1

[1] Domestic & duty-paid foreign. [2] Duty-free foreign. [3] Preliminary. [4] Estimate. *Source: Economic Research Service, U.S.D.A.* T.762

United States Imports[1] of Unmanufactured Wool (Clean Yield) In Millions of Pounds

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1983	6.0	6.2	5.0	6.7	4.9	7.5	6.5	5.8	5.1	8.5	8.0	8.9	78.1
1984	11.2	9.0	7.8	7.8	10.4	6.7	9.6	6.4	6.0	6.9	5.6	6.8	94.2
1985	10.7	5.8	6.0	5.7	7.1	4.9	7.3	4.5	6.9	7.1	5.5	8.0	79.5
1986	10.2	8.8	7.6	7.5	8.0	8.6	7.8	6.3	7.0	5.0	9.2	10.8	97.0
1987	8.6	8.2	9.5	8.7	13.4	8.9	8.6	8.4	6.7	7.0	8.2	9.0	105.1
1988	12.0	12.7	8.8	9.1	8.6	7.4	7.7	5.0	3.3	6.7	8.6	6.7	96.7
1989[2]	8.7	11.3	9.0	13.1	10.3	8.3	10.0	6.9	3.9	10.4	5.1	9.8	106.9
1990[2]	7.3	9.2	4.7	8.2	5.0	4.8	3.4	5.5	5.0	6.9	7.5		

[1] Data are imports for consumption. [2] Preliminary. *Source: Department of Commerce* T.764

Zinc

All sorts of things happened to zinc in 1990, including production problems at Canadian, Australian and Peruvian smelters throughout the year. Next, there were labor tensions and the constant threat of strikes to keep the market boiling. Also, startup problems occurred at Cominco's Red Dog Mine in Alaska, which is the world's largest zinc mine and capable of doubling U.S. zinc production when it comes on stream. Persistent supply uncertainties kept the price of zinc up around 80 cents a pound for the last half of the year.

Since February 1989, six new and reopened zinc mines have come on stream in the U.S. Cominco expects Red Dog production in 1991, the first full year of operation, to total about 560,000 tonnes of zinc concentrate, 120,000 tonnes of lead concentrate, and 50,000 tonnes of lead-zinc bulk concentrate. In 1990, the Alaska Department of the Environment ordered Cominco to address certain environmental concerns, notably the pollution of a major fish-bearing river.

Even without a full production schedule, the Red Dog Mine was something of a metalurgical wonder. For example, in the first eight months of 1990, U.S. zinc mine output was 336,380 tonnes, 82 percent higher than in the comparable eight months of 1989. Full-year 1989 mine production was 275,883 tonnes. According to the Bureau of Mines, the increase was mainly due to output from the Red Dog. Full-year 1990 U.S. production was expected to climb to about 485,000 tonnes, and analysts forecast that 1991 zinc output would reach 650,000 tonnes, primarily the result of increased output from the Red Dog.

Alaska, which did not produce any zinc in 1987, became the largest zinc-producing state in 1990 and will account for fully half of all U.S. zinc output in 1991. Zinc is also mined in Missouri, Tennessee, Colorado, Idaho, Montana, Nevada, New Mexico, and New York.

During 1990, smelter output continued at near capacity rates. In the Jan.-Aug. 1990 period, smelter production totaled 246,612 tonnes, compared with full-year 1989's 358,209. Analysts expected full-1990 smelter output to rise to 375,000 tonnes. For the most part, smelter production gains were realized from improvements at primary refineries.

Apparent domestic consumption in the first eight months was 691,000 tonnes, versus full-year 1989's total of 1.06 million tonnes. Eight-month reported consumption of slab zinc of 420,447 tonnes compared with full-year 1989's 887,203 tonnes. Zinc metal consumption for full-year 1990 was expected to decline to 1.03 million tonnes, due to a slowdown in new car sales brought on by a sluggish economy.

Since 1800, cumulative world zinc metal production and consumption have doubled every 25 years, according to the Bureau of Mines. Output and use in the current 25-year period (1976-2000) are on track to be double the 1951-1975 level.

In October 1990, the London Metals Exchange (LME) announced that Baltimore, Chicago/Toledo and Bridgeport/New Haven were approved delivery points. The exchange now has approved delivery warehouses in North America, Europe, Japan and Singapore.

Futures Market

Zinc futures are traded on the London Metal Exchange (LME).

Salient Statistics of Zinc in the United States In Thousands of Metric Tons

	Net Import Reliance as a % of Apparent Consumption	Production of Slab Zinc						Slab Zinc Dec. 31 Stocks at				Consumption					
		Primary												Base Scrap[2]			
Year		Domestic	Foreign	Total	Value Mil. $[6]	Redistilled Secondary	Total Production	Producer Plants	Consumer Plants	Gov't. Stockpile	Total All Stocks	Zinc Slab	Ores[2]	Zinc[3]	Copper	Aluminum[4]	Total
1986	73	191.1	62.3	253.4	170	62.9	316.3	19.9	54.2	340.6	100.7	999.0	19.2	141.8	131.4	.5	1,274
1987	71	205.3	56.1	261.0	120	82.6	343.9	16.6	57.1	340.6	96.4	1,052.0	2.5	157.8	145.2	.5	1,383
1988[1]	69	196.5	44.8	244.3	324	88.5	329.8	6.4	64.8	340.6	85.9	1,089.0	2.4	97.3	156.0	.7	1,340
1989[5]	61	166.4	96.7	278.3	499	95.1	358.2	8.2	60.3	340.6	90.7	1,060.0	2.1	104.0	147.0	.7	1,314
1990[5]	37			265		105	360	11.4	42		91	990	2.5	105	145	.9	1,270

[1] Preliminary. [2] Recoverable zinc content. [3] Excludes redistilled slab & zinc produced by remelting. [4] Aluminum & magnesium-base scrap. [5] Estimate. [6] Domestic ores (recoverable content). *Source: Bureau of Mines* T.770

Average Price of Zinc, Prime Western Slab (Delivered U.S. Basis) In Cents per Pound

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct	Nov.	Dec.	Average
1987	43.33	41.38	41.38	41.38	44.15	46.92	48.00	48.00	44.87	43.38	44.10	45.38	44.36
1988	45.90	46.93	49.36	54.14	57.74	65.08	68.38	68.38	69.88	71.07	72.54	75.37	62.07
1989	81.58	89.01	95.38	87.76	85.38	81.06	80.38	83.26	81.88	80.31	76.57	73.38	83.00
1990	71.33	66.47	77.37	83.12	87.38	87.38	86.54	82.45	81.00	72.30	70.00	70.00	77.95
1991	70.00	64.53											

Source: American Metal Market T.778

ZINC

World Smelter Production of Zinc In Thousands of Metric Tons

Year	Australia	Belgium	Canada	France	W. Germany	Italy	Japan	Mexico	Norway	Peru	Poland	Spain	USSR	United Kingdom[3]	United States	World Total
1984	306.4	285.3	683.2	258.5	356.4	169.7	754.5	167.0	94.2	148.4	176.0	207.4	995.0	85.6	331.2	6,527
1985	293.2	290.5	692.4	247.2	367.8	215.6	739.6	171.4	92.7	169.7	180.0	213.3	990.0	74.3	333.8	6,785
1986	307.6	288.5	571.0	257.4	370.9	229.4	708.0	173.5	90.4	155.8	179.0	202.0	985.0	85.9	316.3	6,691
1987[1]	312.1	308.6	609.9	249.3	377.5	247.0	665.6	184.8	116.5	144.2	177.0	224.0	1,000	81.4	343.9	7,009
1988[1]	307.0	323.8	703.2	274.1	352.4	242.1	678.2	192.5	121.2	123.1	174.0	256.0	963.0	76.0	329.8	7,115
1989[2]	298.5	299.6	669.7	266.0	342.8	246.0	663.8	193.3	120.4	137.8	177.0	257.0	977.0	79.8	358.2	7,187

[1] Preliminary. [2] Estimated. [3] Some secondary metal included. *Source: Bureau of Mines* T.771

Consumption of Slab Zinc in the United States, by Industries and Grades In Thousands of Metric Tons

		By Industries							By Grades					
Year	Total	Galvanizers	Brass Products	Zinc-Base Alloy[2]	Rolled Zinc	Zinc Oxide	Light-Metal Alloys	Other	Special High Grade	High Grade	Contin.[5] Galvan. Grade	Contrd.[4] Lead Grade	Remelt	Prime Western
1984	848.9	375.6	125.6	232.6	56.9	37.0	14.9	6.2	449.1	100.3	53.9	55.4	5.6	184.5
1985	770.7	362.4	77.9	218.4	48.0	44.4	15.2	4.3	420.6	87.4	37.1	39.3	5.5	174.8
1986	706.0	366.0	73.7	175.1	28.6	40.1	13.0	9.6	353.4	89.1	35.0	37.3	9.0	182.0
1987	798.1	404.7	84.4	178.7	35.4	64.4	—30.6—		415.3	100.0	53.8	39.3	8.6	171.7
1988[3]	833.5	398.8	91.0	205.6		61.4	—76.7—		412.4	104.2	—93.9—			221.9
1989[1]	887.2	444.6	95.8	189.7		70.4	—86.7—							
1990[1]	700													

[1] Estimated. [2] Die casters. [3] Preliminary. [4] Controlled. [5] Continuous. *Source: Bureau of Mines* T.773

Zinc Foreign Trade of the United States In Metric Tons

	Imported for Consumption							Zinc Ore & Manufactures Exported						
								Blocks, Pigs, Anodes, etc.		Wrought & Alloys				
Year	Ores[1]	Blocks, Pigs, Slabs	Zinc Fume	Waste & Scrap	Dross, & Skimmings	Dust, Powder & Flakes	Total Value Thous. $	Unwrought	Unwrought Alloys	Sheets, Plates & Strips	Angles Bars, Rods, etc.	Waste & Scrap	Dust (Blue Powder)	Zinc Ore & Concentrates
1984	86,172	639,228	314	6,259	5,027	7,572	683,211	760	588	975	840	39,146	2,933	30,579
1985	90,186	610,900	—	3,247	4,942	8,681	559,434	1,011	1,243	776	1,434	43,947	2,037	23,264
1986	75,786	665,126	11	4,521	6,087	7,446	522,473	1,938	1,610	721	1,531	68,660	1,551	3,269
1987	46,464	705,985	16	4,025	6,711	7,001	608,256	1,082	5,825	1,732	1,271	88,277	1,927	16,921
1988	62,966	749,133		5,727	6,346	7,652	884,524	482	5,748	3,814	2,016	103,732	2,221	33,590
1989[2]	40,974	711,554		9,367	9,031	7,253	1,241,659	5,532	2,423	16,515	2,653	108,086	8,137	78,877
1990[3]	40,000	650,000		30,000	7,000	8,000						110,000	9,000	240,000

[1] Zinc content. [2] Preliminary. [3] Estimate. *Source: Bureau of Mines* T.774

U.S. Mine Production of Recoverable Zinc In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	23.0	24.8	26.6	21.6	23.3	19.7	20.5	16.8	14.9	21.3	21.2	19.0	252.8
1985	20.5	22.7	24.5	18.6	19.7	19.4	14.4	14.8	15.5	19.9	17.0	19.6	226.5
1986	20.6	18.6	19.8	15.5	12.4	14.4	16.7	15.5	16.7	19.6	15.4	17.9	203.0
1987	17.8	17.8	19.0	18.0	17.8	18.1	17.8	19.1	18.5	18.5	16.1	18.5	216.3
1988	16.8	18.2	22.3	21.9	22.0	22.4	18.8	21.5	19.9	19.9	19.9	19.3	244.3
1989[1]	22.2	20.8	22.9	22.4	23.4	24.3	20.8	25.3	23.1	25.1	22.8	20.9	275.9
1990[1]	26.9	24.8	26.4	26.2	27.9	45.6	50.7	57.1	44.7	41.9			

[1] Preliminary. *Source: Bureau of Mines* T.774A

U.S. Consumption of Slab Zinc by Fabricators In Thousands of Metric Tons

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1984	69.4	70.2	76.8	72.1	73.1	71.1	62.8	67.6	65.1	69.2	64.9	62.4	848.9
1985	65.3	64.4	62.8	61.0	66.0	59.0	52.6	55.9	56.8	58.9	55.8	52.1	711.8
1986	91.8	84.6	84.9	86.0	89.5	78.2	82.0	70.0	87.8	71.0	77.3	74.3	999.0
1987	66.2	78.9	101.0	87.0	81.2	86.9	87.2	98.3	93.0	96.1	95.5	84.4	1,052.0
1988	79.5	76.4	110.3	97.9	110.7	84.6	73.9	111.8	100.0	97.5	87.2	88.1	1,089.0
1989[1]	90.0	81.4	96.0	81.6	97.0	82.1	76.1	101.2	81.2	92.0	92.7	78.0	1,060.0
1990[1]	82.4	79.2	88.0	74.0	79.4	91.0	102.8	100.0	73.0	85.0			

[1] Preliminary. *Source: Bureau of Mines* T.774B

(continued from front flap)

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